AVS404-H
AVS808-H

Video Matrix Switcher - 4K, HDMI, Audio, 4 x 4 or 8 x 8

User Manual

Switch four or eight HDMI 2.0 and HDCP 2.2 compliant signals.

Contact Information

Order toll-free in the U.S. or for FREE technical support 24/7: Call 877-877-BBOX
(outside U.S. call 724-746-5500)
www.blackbox.com • info@blackbox.com

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FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA RADIO FREQUENCY INTERFERENCE STATEMENTS

Class B Digital Device. This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. If this equipment does cause harmful interference to radio or telephone reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an experienced radio/TV technician for help.

Caution:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

To meet FCC requirements, shielded cables and power cords are required to connect this device to a personal computer or other Class B certified device.

This digital apparatus does not exceed the Class B limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe B prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

Normas Oficiales Mexicanas (NOM)
Electrical Safety Statement
INSTRUCCIONES DE SEGURIDAD

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 lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.

9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.

10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

11. El aparato eléctrico deberá ser connectado 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 fisica 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 lineas de energia.

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 objectos liquidos 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: Objectos 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.

Safety Precautions

WARNINGS:

- Do not dismantle the housing or modify the module. It may result in electrical shock or burn!
- To prevent fire or shock hazard, do not expose the unit to rain or moisture, or install this product near water.
- Do not remove the housing of the device. Opening or removing housing may expose you to dangerous voltage or other hazards.
- Spillage into the housing may result in fire, electrical shock, or equipment damage! If an object or liquid falls or spills on to the housing, unplug the module immediately.

CAUTIONS:

- Unpack the equipment carefully and save the original box and packing material for possible future shipment.
- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- Using supplies or parts that do not meet the products' specifications may cause damage, deterioration, or malfunction.
- Refer all servicing to qualified service personnel.
- Do not place any heavy items on the extension cable.
- Install the device in a place that is properly ventilated to avoid damage caused by overheating.
- Keep the module away from liquids.
- Do not twist or pull by force ends of the optical cable. It can cause the unit to malfunction.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Unplug the power cord when the device is left unused for a long period of time.
- Information on disposal for scrapped devices: do not burn or mix with general household waste, treat the devices as normal electrical wastes.

Table of Contents

1. Specifications

Approvals	
Standards	HDCP 2.2, HDCP 1.4
Environmental	
Operating Temperature	32 to 122° F (0 to 50° C)
Operating Humidity	10 to 90%
General	
Audio Signal	Dolby Digital, DTS, DTS-HD
EDID Management	Built-in EDID data and manual EDID management
Resolution (Maximum)	4K x 2K, 1080p 3D
Transmission Distance	4K x 2K @ 60 Hz, < or = to 48 ft. (15 m)
Hardware	
Connectors	AVS404-H: Input: (4) HDMI Type A female, Output: (4) HDMI Type A female, (4) 3.5-mm RCA (SPDIF audio), Control Ports: (1) 3.5-mm jack (IR IN), (1) RJ-45 female (TCP/IP), (1) 3-pin pluggable terminal block (RS-232); AVS808-H: Input: (8) HDMI Type A female, Output: (8) HDMI Type A female, (8) 3.5-mm RCA (SPDIF audio), Control Ports: (1) 3.5-mm jack (IR IN), (1) RJ-45 female (TCP/IP), (1) 3-pin pluggable terminal block (RS-232)
Dimensions	1.7"H x 17.2"W x 9.3"D (4.4 x 43.7 x 23.5 cm)
Weight	AVS404-H: 3.89 lb. (1.77 kg); AVS808-H: 4.31 lb. (1.96 kg)

Power	
AVS404-H	Power Supply: 12 VDC, 2 A, Consumption: 13.3 W (full load), 4.4 W (standby)
AVS808-H	Power Supply: 24 VDC, 2.71 A, Consumption: 32 W (full load), 2.2 W (standby)
Supported Resolutions	
Display Ratio	Resolutions
4K	4096x2160 (30,50,60 Hz), 3840x2160 (24,25,30 50 60 Hz)
21:9	2560x1080 (60Hz)
16:9	1920x1080(1080P 3D), 1600x900, 1366x768, 1280x720, 1024x576 (60Hz)
16:10	1920x1200, 1680x1050, 1440x900, 1360x768,1 280x800 (60Hz)
4:3	1600x1200, 1400x1050, 1280x1204, 1024x768, 800x600, 640x480 (60Hz)

2. Overview

2.1 Introduction

The Video Matrix Switcher - 4K, HDMI, Audio, 4 x 4 or 8 x 8 is a professional HDMI Matrix Switcher that can switch four or eight HDMI 2.0 and HDCP 2.2 compliant signals. It provides four or eight auxiliary audio ports for unembedded HDMI audio output. It also uses powerful EDID management to ensure reliable AV distribution and routing.

You can control the unit via front panel buttons, IR, RS-232, or TCP/IP (optional).

2.2 Features

- 4 x 4 or 8 x 8 HDMI matrix with four or eight unembedded HDMI audio ports;
- HDMI ports support HDMI 2.0 and signals up to 4K x 2K @ 60 Hz* and 1080p 3D, comply with lower HDMI standards, and are HDCP 2.2 compatible.

**NOTE: This is limited to 4:2:0 in 4K x 2K @60 Hz.*

- Transmit 4K x 2K @ 60 Hz signal up to 48 feet (15 m);
- SPDIF ports provide unembedded HDMI audio output;
- Uses powerful EDID management;
- Controllable via front panel button, IR, RS-232, and TCP/IP;
- LCD screen shows real-time I/O connection status;
- You can upgrade firmware through a Micro USB port;
- Installs in a rack.

2.3 What's Included

Your package should contain the following items. If anything is missing or damaged, contact Black Box Technical Support at 877-877-2269 or info@blackbox.com.

AVS404-H:

- Video Matrix Switcher - 4K, HDMI, Audio, 4 x 4
- (6) screws
- (1) IR receiver
- (1) IR remote

- (2) mounting ears for rackmounting
- (1) terminal block to DB9 cable
- (1) 12-VDC, 2-A power adapter with US, UK, AU, amd EU clips
- (4) rubber feet for desktop mounting
- This user manual

AVS808-H:

- Video Matrix Switcher - 4K, HDMI, Audio, 8 x 8
- (6) screws
- (1) IR receiver
- (1) power cord
- (1) IR remote
- (2) mounting ears for rackmounting
- (1) terminal block to DB9 cable
- (1) 24-VDC, 2.71-A power adapter
- (4) rubber feet for desktop mounting
- This user manual

To download this user manual from our Web site:

1. Go to www.blackbox.com
2. Enter the part number (AVS404-H or AVS808-H) in the search box:
3. Click on the "Resources" tab on the product page, and select the document you wish to download.

If you have any trouble accessing the Black Box site to download the manual, you can contact our Technical Support at 877-877-2269 or info@blackbox.com.

2.4 Hardware Description

2.4.1 Video Matrix Switcher - 4K, HDMI, Audio, 4 x 4 (AVS404-H)

Figures 2-1 and 2-2 show the front and back panels of the AVS404-H. Tables 2-1 and 2-2 describe its components.

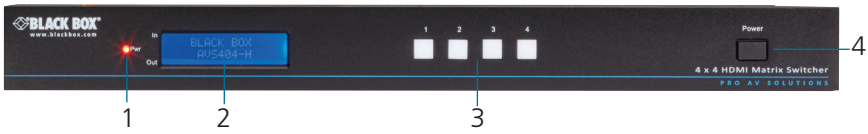

Figure 2-1. Front panel (AVS404-H).

Table 2-1. Front panel components (AVS404-H).

Number in Figure 2-1	Component	Description
1	Power indicator	Lights red when power is on; Lights green in standby mode; Blinks red when upgrading
2	LCD screen	Displays real-time operation status
3	Output selection buttons	Press these buttons to select their corresponding output ports (cycles through ports 1–4)
4	Power button	Press to power the switcher on/off.

Figure 2-2. Back panel (AVS404-H).

Table 2-2. Back panel components (AVS404-H).

Number in Figure 2-2	Component	Description
1	(4) HDMI input ports	Connect to HDMI sources.
2	(4) 3.5-mm RCA (SPDIF audio) output ports	Used for unembedded HDMI audio.
3	(4) HDMI output ports	Connect to HDMI displays.
4	Micro USB port	Used to upgrade firmware
5	4-position DIP Switch	Used to set EDID data: "1" stands for "ON," "0" stands for "OFF" See Section 4.4 for more details.
6	3-pin pluggable terminal block	This RS-232 serial port connects to a control device
7	IR IN	Input port for IR control signal, connects to an IR receiver.
8	RJ-45 port	RJ-45 port:TCP/IP port for unit control
9	Power connector	Connects to 12-VDC, 2-A power adapter.
10	Ground	Connects to ground.

2.4.2 Video Matrix Switcher - 4K, HDMI, Audio, 8 x 8 (AVS808-H)

Figure 2-3 shows the front and back panels of the AVS808-H. Table 2-3 describes its components.

Figure 2-3. Front panel (AVS808-H).

Table 2-3. Front panel components (AVS808-H).

Number in Figure 2-3	Component	Description
1	Power indicator	Lights red when power is on; Lights green in standby mode; Blinks red when upgrading
2	LCD screen	Displays real-time operation status
3	Output selection buttons	Press these buttons to select their corresponding output ports (cycles through ports 1–8)
4	Power button	Press to power the switcher on/off.

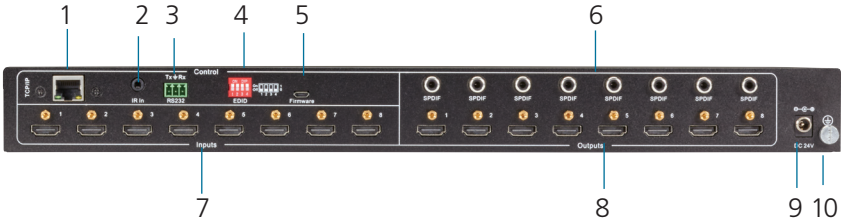

Figure 2-4. Back panel (AVS808-H).

Table 2-4. Back panel components (AVS808-H).

Number in Figure 2-4	Component	Description
1	RJ-45 port	RJ-45 port:TCP/IP port for unit control
2	IR IN	Input port for IR control signal, connects to an IR receiver.
3	3-pin pluggable terminal block	This RS-232 serial port connects to a control device
4	4-position DIP Switch	Used to set EDID data: "1" stands for "ON," "0" stands for "OFF" See Section 4.4 for more details.
5	Micro USB port	Used to upgrade firmware.
6	(8) 3.5-mm RCA (SPDIF audio) output ports	Used for unembedded HDMI audio.
7	(8) HDMI input ports	Connect to HDMI sources.
8	(8) HDMI output ports	Connect to HDMI displays.
9	Power connector	Connects to 24-VDC, 2.71-A power adapter.
10	Ground	Connects to ground.

3. Installation

3.1 Usage Precautions

1. Install the system in a clean environment with proper temperature and humidity.
2. Make sure that all of the power switches, plugs, sockets, and power cords are insulated.
3. Connect all devices before powering on.

3.2 Connection Diagram

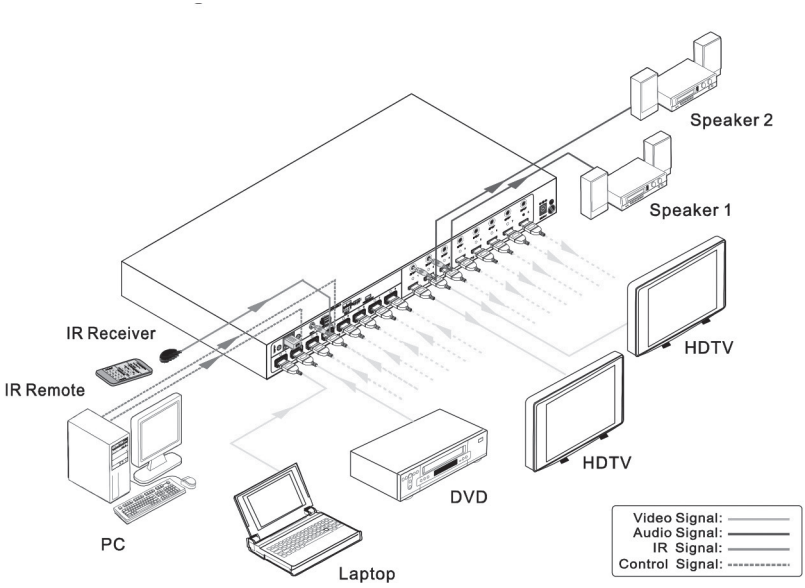

Figure 3-1. Connection diagram.

3.3 Connection Procedure

1. Connect HDMI sources (e.g., DVD) to HDMI INPUTs with HDMI cables.
2. Connect HDMI displays (e.g., HDTV) to HDMI OUTPUTs with HDMI cables.
3. Connect speakers/ amplifiers to the AUDIO OUTPUTs with audio cables.
4. Connect the RS-232 ports of control device (e.g., a PC) and Video Matrix Switcher to enable serial control.

5. Connect the TCP/IP ports of control device (e.g., a PC) and Video Matrix Switcher to enable IP control.
6. Insert an IR receiver to the IR IN port to enable IR control.
7. Plug a 12-VDC power adapter (for the AVS404-H) or a 24-VDC power adapter (for the AVS808-H) to the power port of the Video Matrix Switcher.
8. Connect amplifiers that can decode HDMI audio to the SPDIF ports, or there will be no output on the amplifiers.

3.4 System Applicatiions

Use the Video Matrix Switcher for computer monitoring, large screen displays, conference systems, television, education, and banks, etc.

4. Operation

4.1 IR Control

Connect an IR receiver to the IR IN port of the switcher, users can control it through the included IR remote. Here is a brief introduction to the IR remote:

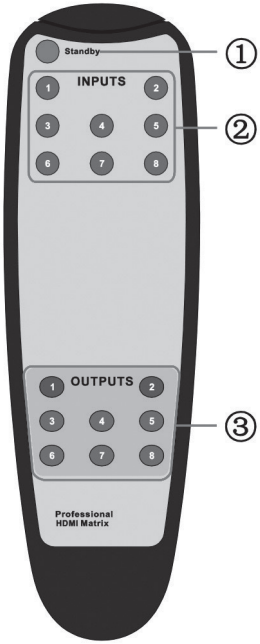

Figure 4-1. IR Remote.

Table 4-1. IR remote components.

Number in Figure 4-1	Component	Description
1	Standby	Enter/ exit standby mode
2	Inputs	Buttons for input selection
3	Outputs	Buttons for output selection

NOTE: I/O Switch Format: INPUT + OUTPUT.

4.2 RS-232 Control

4.2.1 Installing/Uninstalling RS-232 Control Software

- Installation: Copy the control software file to the computer connected to the Video Matrix Switcher.
- Uninstallation: Delete all the control software files in the corresponding file path.

4.2.2 Basic Settings

1. Connect the Video Matrix Switcher to the input devices and output devices.
2. Connect the switcher to a PC that has RS-232 control software installed. Double-click the software icon to run this software.
4. Set the parameters (baud rate, data bit, stop bit and parity bit) correctly to ensure reliable RS-232 control.

4.2.3 RS-232 Communication Commands

NOTE: The RS-232 communication commands are case-sensitive.

NOTE: "[", "]" in the commands are for easy recognition only and not necessary in real operations. Other symbols including ".", ",", "/", "%", ";", "^". are parts of the commands.

Feedback listed in the column "Feedback Example" are only for reference, feedback may vary for different operations.

Dial the EDID switcher to "1111" before sending commands pertaining to software EDID management (with gray background).

Baud rate: 9600
Data bits: 8
Stop bits: 1
Parity bits: None

Table 4-2. RS-232 communication commands.

System Commands		
Command	Function	Feedback Example
/%Lock;	Lock the front panel buttons.	System Locked!
/%Unlock;	Unlock the front panel buttons.	System Unlocked!
/^Version;	Inquire about the firmware version	VX.X.X
/:MessageOff;	Turn off command feedback from the com port. It will only show simple words like "SWITCH OK!".	/:MessageOff;
/:MessageOn;	Turn on command feedback from the com port.	/:MessageOn;
/:FeedbackON;	Enable command feedback on LCD monitor on the front panel (default).	/:FeedbackON;
/:FeedbackOFF;	Disable command feedback on LCD monitor on the front panel (default).	/:FeedbackOFF;

Table 4-2 (continued). RS-232 communication commands.

Operation Commands		
Command	Function	Feedback Example
Undo.	Cancel the previous operation.	Undo Ok!
Demo.]	Switch to the "demo" mode, convert input and output in turn like 1B1, 1B2, …4B3, 4B4, 1B1… and so on .The switching interval is 2 seconds. Switch to normal mode by pressing any front panel button or sending any other command.	Demo Mode
[x]All.	Transfer signal from input x to all outputs.	1 To All.
All#.	Transfer all inputs to corresponding outputs, like 1->1, 2->2…	All Through.
[x]#.	Transfer signal from input x to output x.	1 Through.
All@.	Switch on all outputs.	All Open.
[x]@.	Switch on output x.	1 Open.
All$.	Switch off all outputs, but except coaxial outputs for digital audio.	All Closed.
[x]$.	Switch off output x.	1 Closed.
[x]B[y1],[y2],[y3].	Transfer AV signal from input x to output y1, y2, y3	1B2
BlackscreenON[x].	Switch on input x.	BlackscreenON1.
BlackscreenOFF[x].	Switch off input x.	BlackscreenOFF1.
Save[y].	Save the present operation status to preset command y, y=0–11.	Save To F1
Recall[y].	Recall preset command y, y=0–11.	Recall From F1

Table 4-2 (continued). RS-232 communication commands.

Operation Commands (continued)		
Command	Function	Feedback Example
Clear[y].	Clear preset command y, y=0–11.	Clear F1
EDIDG[x].	Get EDID data from output x and display it on com port.	
EDIDM[X]B[y].	Enable input x to learn the EDID data from output y. If the EDID data is not available, the matrix will set it to initial EDID data.	EDIDM3B1
EDIDC[x]B[y].	Capture the EDID data of output x and save it as No.y EDID, y=1–10, 12–14	EDIDC3B1
EDIDExtract[x][y].	Invoke No.y EDID data saved through COM port to input x, y=1–10, 12–14	Pick up success
UpgradeSoftwareEDID[y].	Save the EDID data to No.y EDID, invoke the EDID by sending command EDIDExtract[x][y].	Please send the EDID file Upgrade success
EDIDUpgrade[x].	Upgrade the EDID data of input x (x=1~4: upgrade the EDID of single input; x=9: upgrade the EDID of all inputs) Send EDID file (.bin) within 10 seconds.	Please send the EDID file Upgrade success
UpgradeIntEDID[x].	Used for programing customized EDID data x=12–14, please refer to 4.2.4 EDID Management for more details.	Please send the EDID file.
EDID/[x]/[y].	Invoke embeded EDID data No.y to input x, y=1–10	EDID/8/3

Table 4-2 (continued). RS-232 communication commands.

Operation Commands (continued)		
Command	Function	Feedback Example
EDIDPCM[x].	Set the audio of input x to PCM in EDID database.	EDIDPCM1
EDIDH[x]B[y].	Copy the EDID data from output x to input y. If the EDID data is available and the audio part supports not only PCM format, then force-set it to only support PCM. If the EDID data is not available, it will set to initial EDID.	EDIDH1B1
PWON.	Work normally.	PWON
STANDBY.	Enter standby mode. (Return to normal mode via front panel buttons/ any other command/ IR remote)	STANDBY
/%[x]:[y].	Manage HDCP status of outputs "x" stands for output port, can be 1–4 or ALL. When x=ALL, it means manage HDCP status of all outputs. "y" stands for HDCP status, can be 1 (with HDCP) or 0 (not with HDCP).	/%ALL:0.
%0801.	Enable auto HDCP management (HDCP Active)	%0801.

Table 4-2 (continued). RS-232 communication commands.

Operation Commands (continued)		
Command	Function	Feedback Example
%0911.	Reset to factory default. Switch mode: all through; scene/ HDCP status remains the same. The customized EDID data will be deleted automatically.	Factory Default
DigitAudioON[x].	Enable the SPDIF audio output of output x. • x=1–4, enable the SPDIF audio output of single output port. • x=9, enable the SPDIF audio output of all output ports.	DigitAudio ON with Output 4
DigitAudioOFF[x].	Disable the SPDIF audio output of output x. • x=1–4, disable the SPDIF audio output of single output port. • x=9, disable the SPDIF audio output of all output ports.	DigitAudio OFF with Output 4
Inquiry Commands		
Status[x].	Check the input channel for output x	AV: 1->1
Status.	Check the input channel for all outputs	AV:1->1 …. AV: 4-> 4
%9961.	Return the keylock status.	System Unlock!/System Locked!

Table 4-2 (continued). RS-232 communication commands.

Inquiry Commands (continued)		
Command	Function	Feedback Example
%9962.	Check the power status	PWON
%9963.	Check the audio format of EDID database for input x	IN1: PCM … IN8: PCM
%9964.	Check the IP and subnet mask of the switcher.	IP 192.168.0.178 SB 255.255.255.0 DHCP 0
%9971.	Inquire connection status for all inputs, N means there is no source, Y means there is connected source.	In 1 2 3 4 Connect N Y Y N In 5 6 7 8 Connect N Y Y N
%9972.	Inquire connection status for all outputs, N means there is no display, Y means there is connected display.	Out 1 2 3 4 Connect Y Y N N Out 5 6 7 8 Connect N Y Y N
%9973.	Check the inputs HDCP status, N means it's not with HDCP, Y means it's with HDCP.	In 1 2 3 4 HDCP N Y Y N In 5 6 7 8 HDCP N Y Y N
%9974.	Check the outputs HDCP status, N means it's not with HDCP, Y means it's with HDCP.	Out 1 2 3 4 HDCP N Y Y N Out 5 6 7 8 HDCP N Y Y N
%9975.	Check the I/O switch status.	In 1 2 3 4 Out 1 2 3 4 In 5 6 7 8 Out 5 6 7 8
%9977.	Check the status of digital audio of all outputs, N is for "off", Y is for "on".	Out 1 2 3 4 Audio N N Y Y Out 5 6 7 8 Audio N N Y Y

4.3 TCP/IP Control

4.3.1 Control Modes

TCP/IP default settings: IP is 192.168.0.178, Gateway is 192.168.0.1, and Serial Port is 8080. IP can be changed as you need, Serial Port cannot be changed.

- Controlled by single PC: Connect a computer to the TCP/IP port of the Switcher, and set its network segment to the same as the default IP of the Switcher (192.168.0.178).

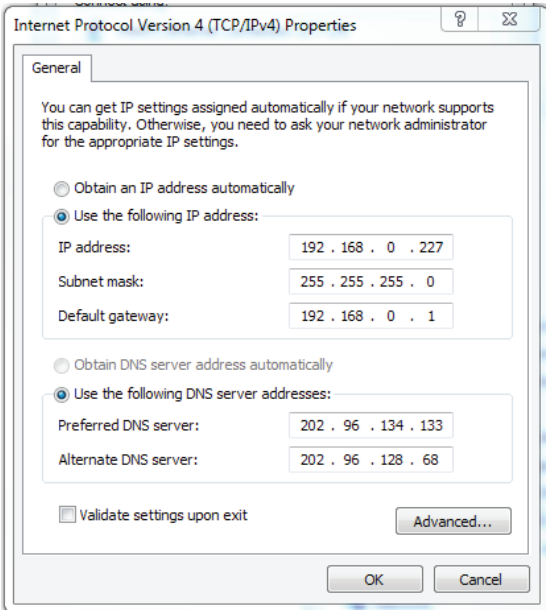

Figure 4-2. Modify the IP of PC.

- Controlled by PC(s) in LAN

The Switcher can be connected with a router to make up a LAN with the PC(s); this makes it able to be controlled in a LAN. The Switcher's network segment is the same as the router.

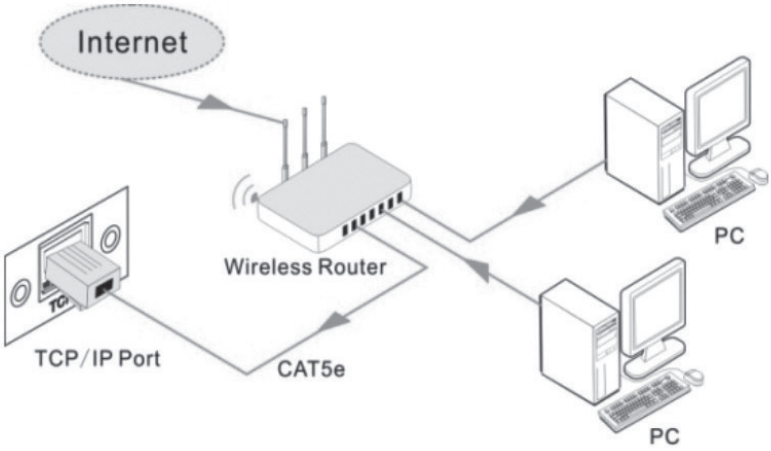

Figure 4-3. Connect to LAN

1. Connect the TCP/IP port of the Switcher to the Ethernet port of PC with twisted pair.
2. Set the PC's network segment to the same as the Switcher. Remember the PC's original network segment.
3. Set the Switcher's network segment to the same as the router.
4. Set the PC's network segment to the original one.
5. Connect the Switcher and PC(s) to the router. In the same LAN, each PC can control the Switcher asynchronously.

Then it can control the device via TCP/IP communication software.

4.3.2 Control Switcher via TCP/IP Communication Software

TCPUDP software example

1. Connect a computer with TCPUDP software to Switcher. Open the TCPUDP software (or any other TCP/IP communication software) and create a connection, enter the IP address and port of the Switcher (default IP: 192.168.0.178, port: 8080):
2. Enter commands in the designed area to control the Switcher, see below:

4.3.3 Control Switcher via Web-Based GUI

The Switcher can also be controlled via web-based GUI. This allows users to interact with the Switcher through graphical icons and visual indicators.

Type 192.168.0.178 in your browser. The log-in interface will appear.

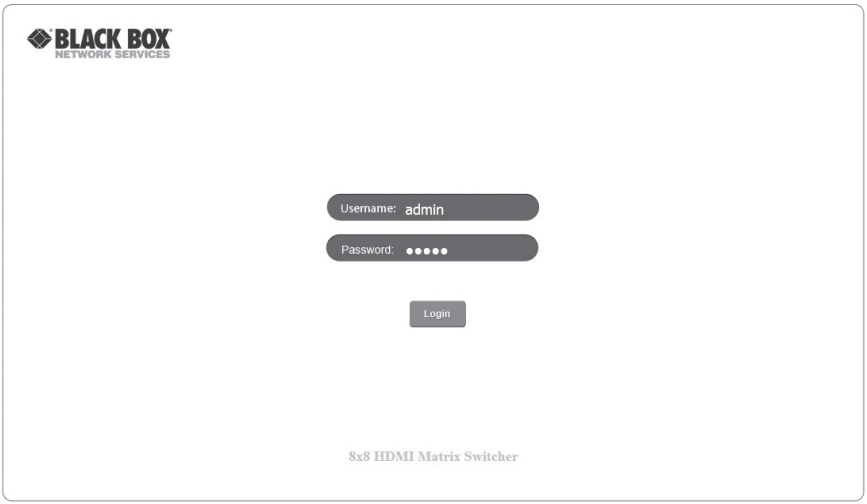

Figure 4-4. Login GUI.

This system is divided into administrator and user modes.

Administrator mode: User name: admin; Password: admin (default setting)

User mode: User name: user; Password: user (default setting).

NOTE: If you log in as admin, you can access more configuration interfaces than if you log in as user. Here is a brief introduction to the interfaces.

4.3.3.1 Routing Menu, Scene Tab

Type the user name: admin, password: admin, and then click LOGIN. The Routing menu, Scene tab will appear.

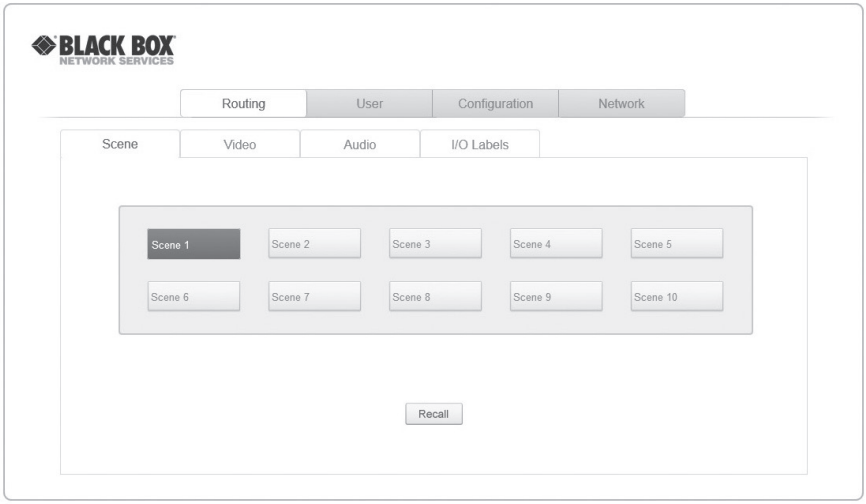

Figure 4-5. Scene Menu.

All ten scenes are shown in above interface. Select a scene and then click"Load" to activate the selected scene.

Click "Cancel" to cancel the current operation.

4.3.3.2 Routing Menu, Video Tab

Click "Video" to enter the following interface for intuitive I/O connection switching.

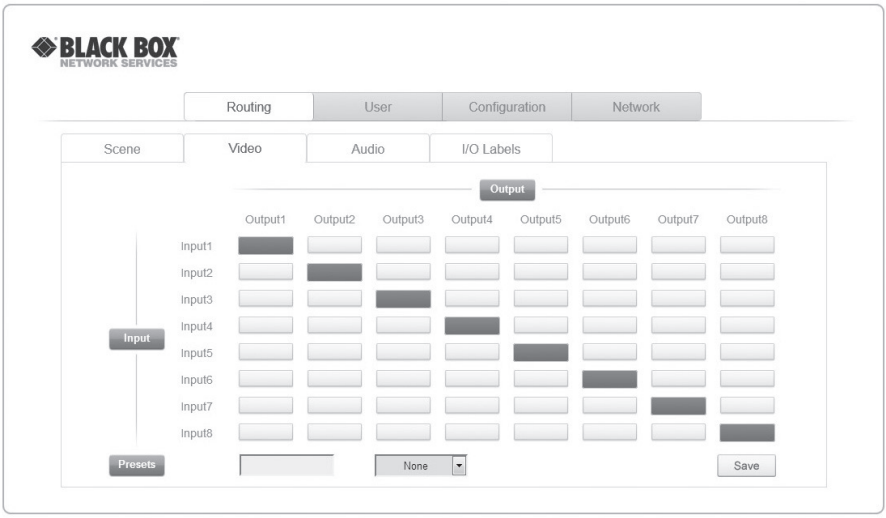

Figure 4-6. Video tab screen.

The button matrix displays every possible connection between every input and output; users can carry on the connections by clicking corresponding button.

Buttons 1–8 at the right-bottom corner provide quick saving and recall for overall connection status. For example:

1. Select button1 at the INPUT column.
2. Select button 5 at the OUTPUT column. (If all OUTPUT ports are needed, click "All.")
3. Choose a scene that you want to save.
4. Click "Confirm" to save the setting or click "Clear" to clear setup.

4.3.3.3 Routing Menu, Audio Tab

Click "Audio" to enter the following interface for intuitive I/O connection switching.

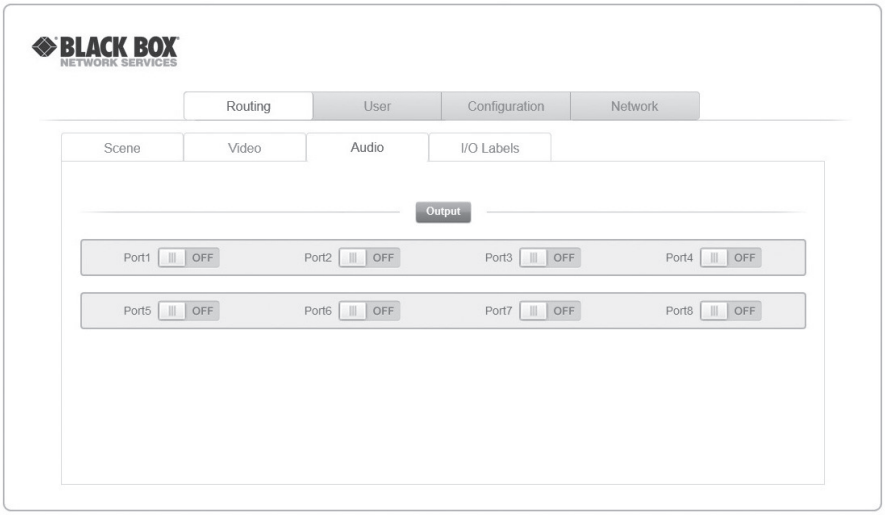

Figure 4-7. Audio tab screen.

4.3.3.4 User Tab

To login in user mode, type in the user name and password.

User mode: User name: user; Password: user (default setting).

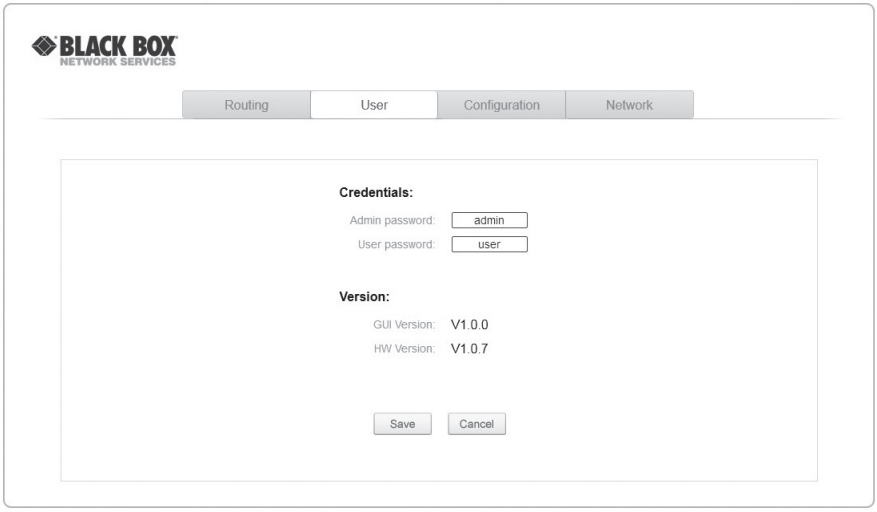

Figure 4-8. Login in user mode.

4.3.3.5 Configuration Tab

1. Configuration:

1) Click the Configuration button to enter the configuration interfaces.

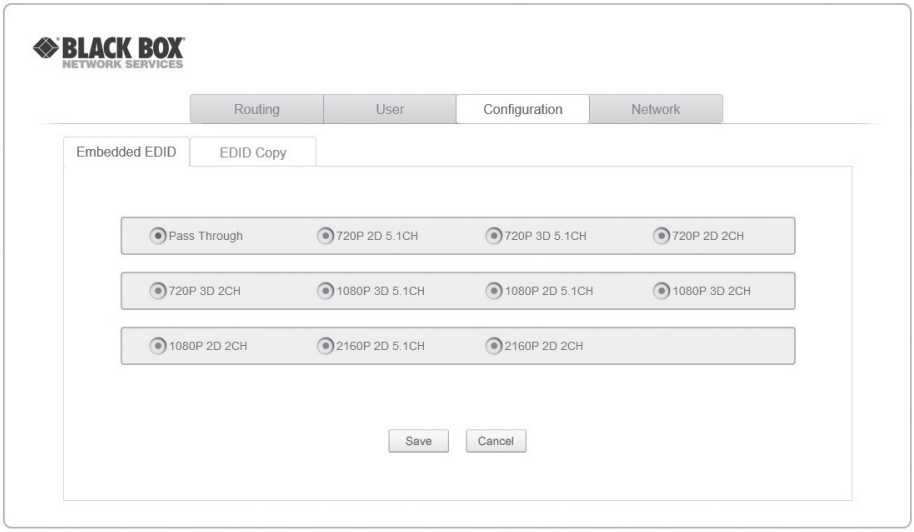

Figure 4-9. Embedded EDID.

All embedded EDIDs of the Switcher are shown in the above interface. Select EDID to match your needs.

2) Select "EDID Copy" to enter the following interface:

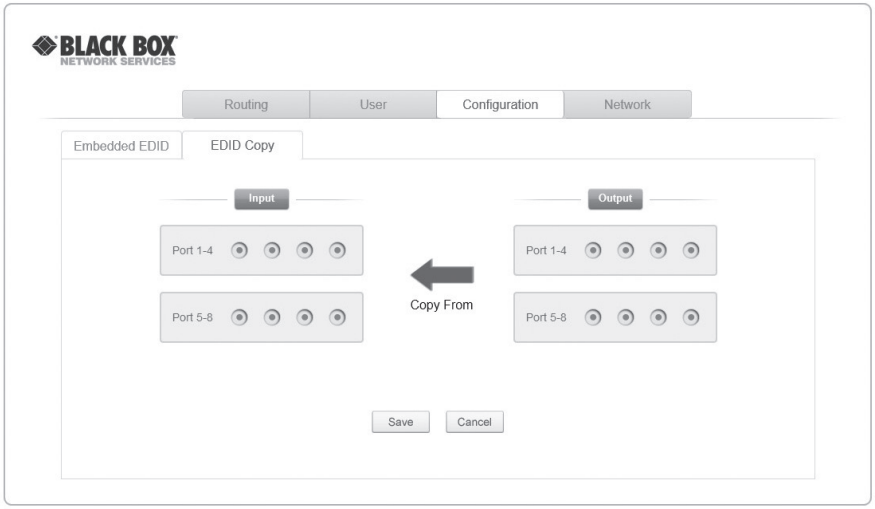

Figure 4-10. Copy EDID.

The EDID of the INPUT device can be copied from OUTPUT devices.

1. Select one OUTPUT device that you want to copy its EDID.

2. Select one or more input devices that need to gain EDID. When selecting To All inputs, all input devices will copy the EDID from the output device.

3. Click "Save" to save the setting or click "Cancel" to cancel the operation.

3) Select "Audio Out" to enter the following interface to turn on/off the Audio Output.

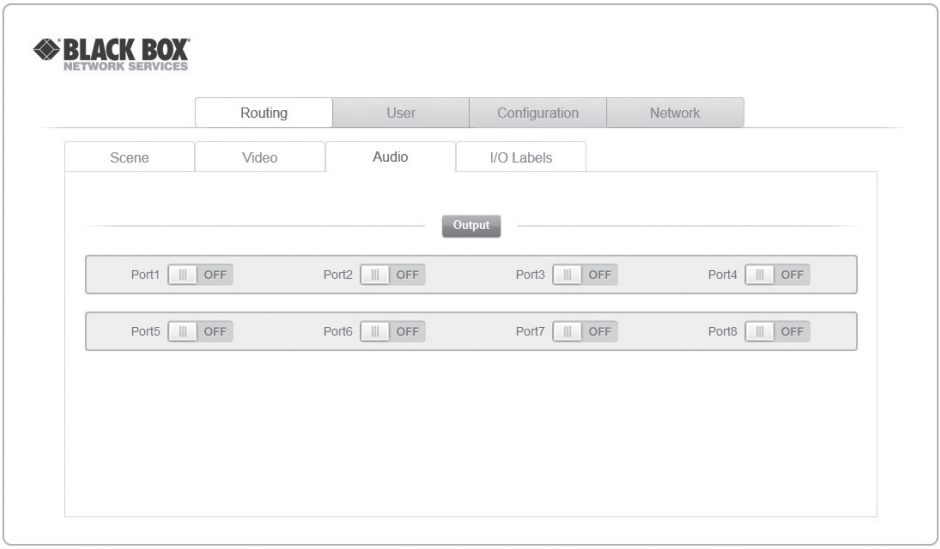

Figure 4-11. Audio EDID.

2. Network:

1) At the top of the interface, click "Network" to enter the following interface to modify the name and mode of this machine, and then it will display on the LCD screen.

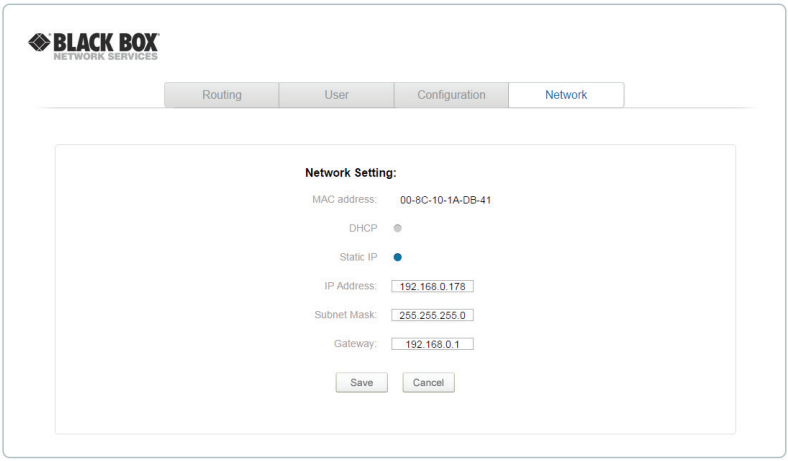

Figure 4-12. Network Tab.

2) Select "I/O Labels" to enter the following interface to modify the name of buttons.

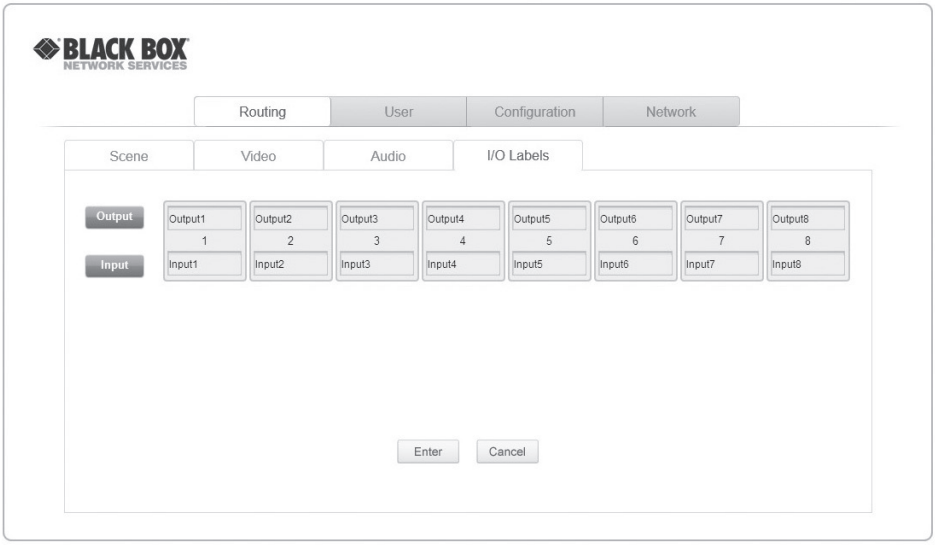

Figure 4-13. I/O labels.

3) Select "Scene" to enter the following interface to modify the name of scenes.

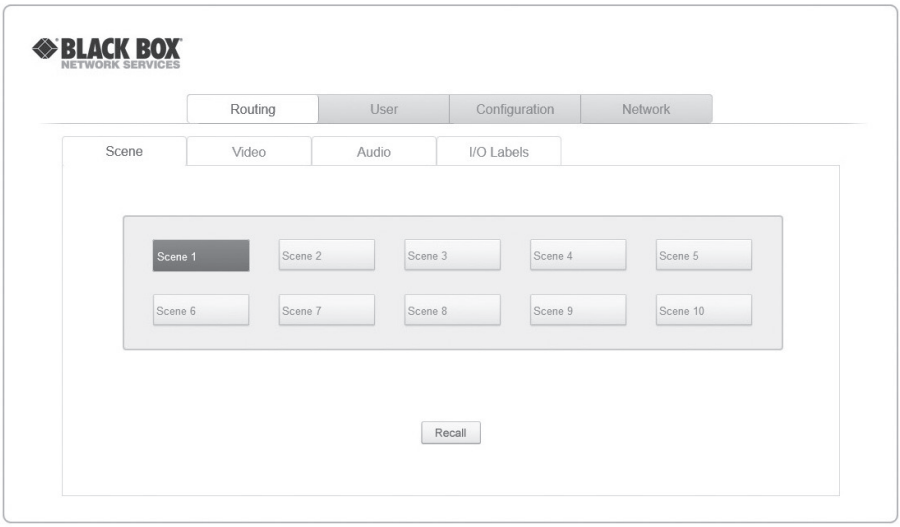

Figure 4-14. Status Scene.

3. Network:

At the top of the interface, click "Network" to enter the following interface to inquire and configure network settings, including MAC address, IP address, subnet mask, and Gateway.

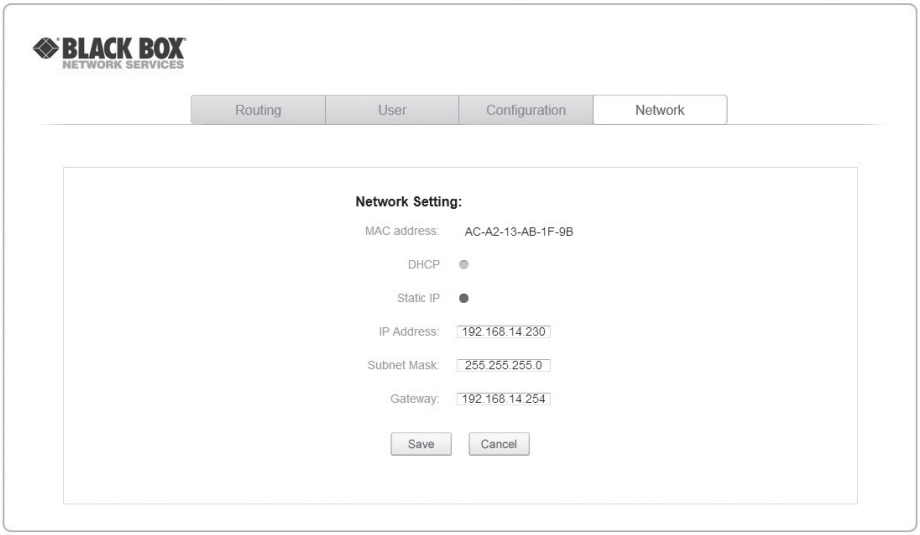

Figure 4-15. Network.

4.3.4 TCP/IP Configuration

IP address, subnet mask, and Gateway of Switcher can be modified via GUI from the above description, but beyond that users can configure the IP port, including IP reset, password reset, and IP module firmware update on the WebServer.

Type the designed website (Default: 192.168.0.178:100, changeable) in your browser. Enterthe correct username and password to log in the WebServer:

Username: admin; Password: admin

Here is the main configuration interface of the WebServer:

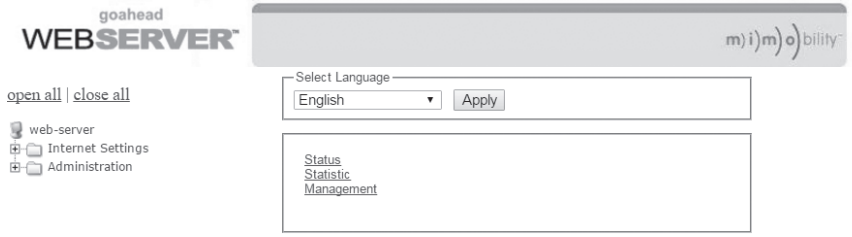

Figure 4-16. TCP/IP Configuration.

4.3.5 GUI Update

The GUI for Switcher supports online updating at http://192.168.0.178:100. Type the username and password (the same as the GUI log-in settings, modified password will be available only after rebooting) to log in the configuration interface. After that, click Administration at the source menu to Upload Program as shown below:

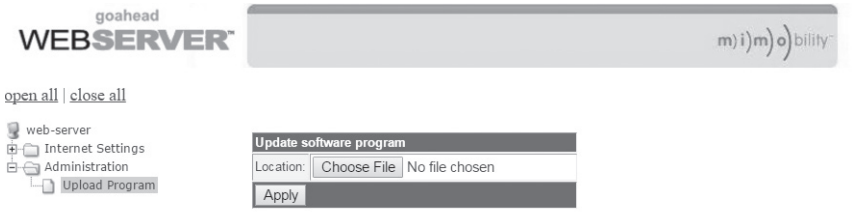

Figure 4-17. GUI Update.

Select the desired update file and press Apply and the upgrade will begin.

4.4 Hardware EDID Management

The Video Matrix Switcher provides hardware EDID management to create effective communication between the display and sources.

In factory default status mode (Status: 0000), the Video Matrix Switcher passes through the signals directly, and the input and output device process the signal automatically. You can invoke other saved EDID data by adjusting the 4-pin EDID DIP switcher or sending the corresponding RS-232 command.

Via 4-pin EDID DIP switcher

TheVideo Matrix Switcher has a 4-pin EDID DIP switcher to manage EDID. Dial the switchers to select EDID data.

- Embedded EDID data: 10 sets in total, the chart below illustrates the 10 Embedded EDID data.

Table 4-3. EDID information vis DIP switch.

Number	Switcher Status	EDID Information
1	0001	720P 2D 5.1CH
2	0010	720P 3D 5.1CH
3	0011	720P 2D 2CH
4	0100	720P 3D 2CH
5	0101	1080P 3D 5.1CH
6	0110	1080P 2D 5.1CH
7	0111	1080P 3D 2CH
8	1000	1080P 2D 2CH
9	1001	2160P 2D 5.1CH
10	1010	2160P 2D 2CH

NOTE: EDID Information listed is the above chart is factory default data. Embedded EDID data can be updated by sending command UpgradeEDID[x]..

Custom EDID data: Maximum of 3 sets.

The chart below shows switcher status for custom EDID No.12–14.

Table 4-4. Custom EDID information.

Number	Switcher Status	EDID Information
12	1100	Customized EDID data
13	1101	Customized EDID data
14	1110	Customized EDID data

NOTES:

1. *EDID information listed in the above chart is factory default data. Embedded EDID data can be updated by sending command UpgradeIntEDID[x]..*
2. *Embedded EDID data can also be invoked via command EDID/[x]/[y]..*

4.5 Firmware Upgrade through USB port

The Video Matrix Switcher has a USB port for firmware upgrade on the rear panel.

Preparation: Copy the upgrade software DfuSe Demonstration& upgrade file (.dfu) to control PC.

Follow these steps to upgrade the device:

1. Connect the control PC to the USB port of Video Matrix Switcher.
2. Reboot Video Matrix Switcher to enter upgrade mode. Press and hold buttons 2 and 3 when rebooting. The power indicator will keep blinking in upgrade mode.
3. Double-click the icon of upgrade software DfuSe Demonstration (see the figure below).

Figure 4-18. DfuSe demonstration icon.

The following window will pop up:

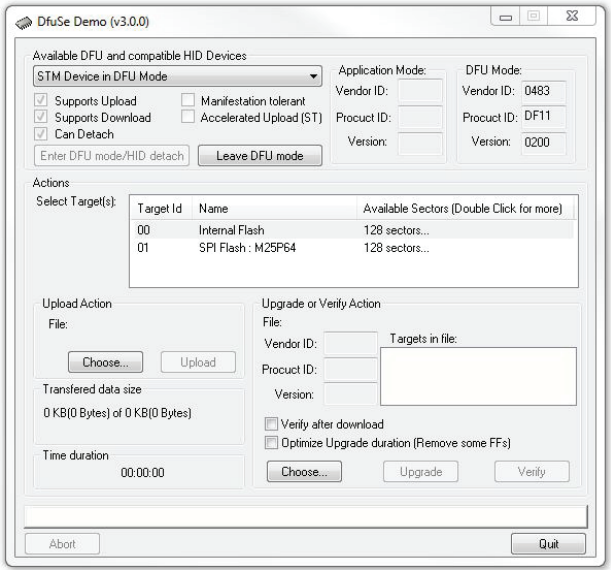

Figure 4-19. Upgrade firmware via DfuSe Demonstration.

4. Click Choose… to load desired upgrade file (.dfu).

5. Click Upgrade to start.

NOTE: Make sure the Leave DFU mode button is available to ensure that the control PC and Video Matrix Switcher are connected successfully.

5. Troubleshooting and Maintenance

5.1 Problems/Causes/Solutions

Problem:

Color is lost or no video signal output.

Cause #1:

Cables may not be connected correctly or may be broken.

Solution #1:

Check whether the cables are connected and in working order.

Cause #2:

Failed or loose connection.

Solution #2:

Make sure the connection is good.

Problem:

No output image when switching.

Cause #1:

No signal at the input/output end.

Solution #1:

Check with oscilloscope or multimeter if there is any signal at the input/ output end.

Cause #2:

Failed or loose connection.

Solution #2:

Make sure the connection is good.

Cause #3:

Input source is HDCP but HDCP compliance is switched off.

Solution #3:

Send command /%[x]:[1]. to change HDCP compliance status.

Cause #4:

The display doesn't support the input resolution.

Solution #4:

Switch to another input source or enable the display to learn the EDID data of the input.

Problem:

No output on the amplifiers connected to audio output ports.

Cause:

The amplifiers are not able to decode HDMI audio.

Solution:

Change to amplifiers that can decode HDMI audio.

Problem:

Cannot control the device via front panel buttons.

Cause:

Front panel buttons are locked.

Solution:

Send command /%Unlock; to unlock.

Problem:

Cannot control the device via IR remote.

Cause #1:

Failed battery.

Solution #1:

Replace with a new battery.

Cause #2:

The IR remote is broken.

Solution #2:

Contact Black Box Technical Support at 877-877-2269 or info@blackbox.com.

Cause #3:

The IR remote is beyond the effective range of the IR signal or not pointing at the IR receiver.

Solution #3:

Adjust the distance and angle and point directly at the IR receiver.

Problem:

Power Indicator remains off when powered on.

Cause:

Failed or loose power connection.

Solution:

Check whether the cables are connected correctly.

Problem:

EDID management does not work normally

Cause:

The HDMI cable is broken at the output end.

Solution:

Replace with another HDMI cable that is in good working condition.

Problem:

There is a blank screen on the display when switching.

Cause:

The display does not support the resolution of the video source.

Solution #1:

Switch again.

Solution #2:

Manage the EDID data manually to make the resolution of the video source automatically compliant with the output resolution.

Problem:

Cannot control the device via a control device (e.g. a PC) through the RS-232 port.

Cause #1:

Wrong connection.

Solution #1:

Check to make sure the connection between the control device and the unit is secure.

Cause #2:

Wrong RS-232 communication parameters.

Solution #2:

Type in correct RS-232 communication parameters:
Baud rate: 9600;
Data bit: 8;
Stop bit: 1;
Parity bit: none.

Cause #3:

Broken RS-232 port.

Solution #3:

Contact Black Box Technical Support at 877-877-2269 or info@blackbox.com.

Problem:

Static becomes stronger when connecting the video connectors

Cause:

Bad grounding.

Solution:

Check the grounding and make sure it is connected well.

Problem:

Cannot control the device via RS-232/IR remote/front-panel buttons.

Cause:

The device is broken.

Solution:

Contact Black Box Technical Support at 877-877-2269 or info@blackbox.com.

5.2 Contacting Black Box

If you determine that your Video Matrix Switcher - 4K, HDMI, Audio is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box Technical Support at 877-877-2269 or info@blackbox.com.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.
- when the problem occurs.
- the components involved in the problem.
- any particular application that, when used, appears to create the problem or make it worse.

5.3 Shipping and Packaging

If you need to transport or ship your Video Matrix Switcher - 4K, HDMI, Audio:

- Package it carefully. We recommend that you use the original container.
- If you are returning the unit, make sure you include everything you received with it. Before you ship for return or repair, contact Black Box to get a Return Authorization (RA) number.

Black Box Tech Support: FREE! Live. 24/7.

Great tech support is just 60 seconds away at
877-877-2269 or blackbox.com.

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About Black Box

Black Box provides an extensive range of networking and infrastructure products. You'll find everything from cabinets and racks and power and surge protection products to media converters and Ethernet switches all supported by free, live 24/7 Tech support available in 60 seconds or less.