



AVSC-0802H

Presentation Switcher - CATx, 8 x 2

User Manual



Contact Information

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

Trademarks Used in this Manual

Trademarks Used in this Manual

Black Box and the Double Diamond logo are registered trademarks of BB Technologies, Inc.

Any other trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

Disclaimer

Black Box Network Services shall not be liable for damages of any kind, including, but not limited to, punitive, consequential or cost of cover damages, resulting from any errors in the product information or specifications set forth in this document and Black Box Network Services may revise this document at any time without notice.

FEDERAL COMMUNICATIONS COMMISSION AND
INDUSTRY CANADA RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

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

This digital apparatus does not exceed the Class A 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 la classe A 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.

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 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.

Safety Precautions

Safety Precautions

1. Do not expose this apparatus to rain, moisture, dripping or splashing water and do not place objects filled with liquids, such as vases, on the apparatus.
2. Do not install or place this unit in a bookcase, built-in cabinet or in another confined space. Make sure the unit is well ventilated.
3. To prevent risk of electric shock or fire hazard caused by overheating, do not obstruct the unit's ventilation openings with newspapers, tablecloths, curtains, and similar items.
4. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
5. Do not place sources of flames, such as lighted candles, on the unit.
6. Clean this apparatus only with a dry cloth.
7. Unplug this apparatus during lightning storms or when unused for long periods of time.
8. Protect the power cord from being walked on or pinched particularly at plugs.
9. Only use attachments/accessories specified by the manufacturer.
10. Refer all servicing to qualified service personnel.

Table of Contents

1. Specifications 8

2. Overview 10

2.1 Introduction 10

2.2 Features 10

2.3 What's Included 11

2.4 Hardware Description 12

2.5 Typical Application 17

3. Pin Assignments and Wiring 19

3.1 MIC IN 19

3.2 Audio IN/OUT 19

3.3 USB 20

3.4 RS-232/IR 20

3.5 RS-485 21

3.6 LAN/Ethernet 22

3.7 RS-232 23

3.8 CATx 24

4. Remote Handset 25

5. Web UI 26

5.1 Access the Web Interface 26

5.2 Web Interface Introduction 29

6. Troubleshooting 48

Appendix. RS-232 Command Set 51

A.1 About the Command Set 51

A.2 Commands 52

1. Specifications

Video	
Connectors	(3) HDMI IN, (2) VGA IN, (1) DisplayPort IN, (2) CATx IN; (1) HDMI OUT, (1) CATx OUT
Input Signal Type	HDMI 1.4, CATx
Input Resolution Support	VESA: 640 x 480 @ 60 Hz, 800 x 600 @ 60 Hz, 1024 x 768 @ 60 Hz, 1280 x 768 @ 60Hz, 1280 x 800 @ 60Hz, 1280 x 960 @ 60Hz, 1280 x 1024 @ 60 Hz, 1360 x 768 @ 60 Hz, 1366 x 768 @ 60 Hz, 1440 x 900 @ 60 Hz, 1600 x 900 @ 60 Hz, 1600 x 1200 @ 60 Hz, 1680 x 1050 @ 60 Hz, 1920 x 1200 @ 60 Hz, SMPTE: 720 x 480 @ 60 Hz, 720 x 576 @ 50 Hz, 1280 x 720 @ 50/60 Hz, 1920 x 1080 @ 50/60 Hz, 3840 x 2160 @ 30 Hz
Input Video Level	0.5-1.2 V p-p
Output Signal Type	HDMI 1.4, CATx
Output Resolution Support	VESA: 640 x 480 @ 60 Hz, 800 x 600 @ 60 Hz, 1024 x 768 @ 60 Hz, 1280 x 768 @ 60Hz, 1280 x 800 @ 60Hz, 1280 x 960 @ 60Hz, 1280 x 1024 @ 60 Hz, 1360 x 768 @ 60 Hz, 1366 x 768 @ 60 Hz, 1440 x 900 @ 60 Hz, 1600 x 900 @ 60 Hz, 1600 x 1200 @ 60 Hz, 1680 x 1050 @ 60 Hz, 1920 x 1200 @ 60 Hz, 1920 x 1200 @ 60 Hz; SMPTE: 720 x 480 @ 60 Hz, 720 x 576 @ 50 Hz, 1280 x 720 @ 50/60 Hz, 1920 x 1080 @ 50/60 Hz, 3840 x 2160 @ 30 Hz

Video (continued)	
Video Impedance	100 ohms
Deep Color	1080p: 36-bit, 4K: 24-bit
Audio	
Connectors	(2) Microphone IN (3-pin Phoenix connector), (2) Balanced stereo audio IN (5-pin Phoenix connector), (1) Balanced stereo audio OUT (5-pin Phoenix connector),
Control	
Control Method	RS-485, RS-232, LAN, Web UI, IR Remote, Front-panel Buttons
Electrical/Power	
ESD Protection	Human-body Model: ±8 kV (Air-gap discharge)/±4 kV (Contact discharge)
Surge Protection	Voltage: ±1 kV (Ten times respectively for the positive and negative voltage)
Electrical Fast Transient/Burst	Data communication cord: 1 kV; Power cord : 2 kV
Power Supply	100 to 240 VAC, 50/60 Hz
Power Consumption (Maximum)	73.5 W
Environmental	
Operating Temperature	32 to 113° F (0 to 45° C)
Storage Temperature	-4°F to +158° F (-20 to +70° C)
Humidity	10% to 90%, non-condensing
Mechanical	
Dimensions	1.71"H x 17.32"W x 12.99"D (4.35 x 44 x 33 cm)
Weight	10.38 lb. (4.72 kg)
Rack Space Required	1U height
Approvals	CE, FCC, RoHS

2. Overview

2.1 Introduction

The Presentation Switcher - CATx, 8 x 2 is a powerful 8-input, 2-output, multi-format converter, switcher, scaler, and extender with built-in 4K scaling, in a compact 1U rack enclosure. It offers three HDMI inputs, two VGA inputs with stereo audio, one DisplayPort input, (2) CATx inputs, one HDMI output and one CATx output. The CATx inputs and outputs use bidirectional IR passthrough, RS-232 passthrough, and Power over CATx (PoC).

Any of eight inputs can be routed into any of two outputs seamlessly. The switcher supports up to 4K @30 Hz video resolution and can scale output from 480p to 3840 x 2160 @ 30 Hz regardless of the input video resolution. Plus, you can mix two microphone inputs into any of the eight inputs for output. One balanced stereo audio breaks out from CATx output.

You can control the switcher via front-panel buttons, RS-232, RS-485, LAN, Web UI, and IR remote. Control the switcher directly or via a third party control system. It provides the complete API commands for integration. It also supports bi-directional USB passthrough for use in KVM at either end of the link.

This 8 x 2 seamless 4K scaling presentation matrix switcher is your perfect choice for collaboration presentation in conference and education field.

2.2 Features

- Has (3) HDMI inputs, (2) VGA inputs with stereo audio, (1) DisplayPort input, (2) CATx inputs, (1) HDMI output and (1) CATx output.
- Provides quick and seamless switching.
- Supports (3) HDMI inputs, (2) VGA inputs with stereo audio, (1) DisplayPort input, (2) CATx inputs.
- Supports (1) HDMI output and (1) CATx output to distribute 4K video up to 230 feet (70 m), 1080p video up to 328 feet (100 m) over a single CAT5e/6 cable; or 4K and 1080p video up to 328 feet (100 m) over a single CAT6a/7 cable.
- Both HDMI and CATx output have a built-in 4K @ 30 Hz scaler.
- Enables output scaler from 480p to 3840 x 2160 @ 30 Hz.
- Provides (2) microphone inputs with gain control to mix with outputs.
- Allows one balanced stereo audio to break out from CATx output.

- Offers KVM control at both local or remote locations.
- Bi-directional IR, RS232, Ethernet, USB and power pass through over CATx input and output.
- Control the switcher via RS-485, RS-232, LAN, Web UI, IR remote and pushbuttons.
- Manage EDID using the Web UI.
- Provides complete API commands to a third-party control system for integration.
- Includes a 100–240 VAC, 50/60 Hz universal power supply

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.

- Presentation Switcher - CATx, 8 x 2 (AVSC-0802H)
- (1) US, EU, UK and AU power cord.
- (2) Phoenix male connector (3.5 mm, 3 pins)
- (3) Phoenix Male Connector (3.5 mm, 5 pins)
- (3) Phoenix Male Connector (3.5 mm, 6 pins)
- (1) pair of mounting brackets
- IR Remote handset
- This user manual

2.4 Hardware Description

Figures 2-1 and 2-2 show the front and back panels of the switcher. Tables 2-1 and 2-2 describe their components.

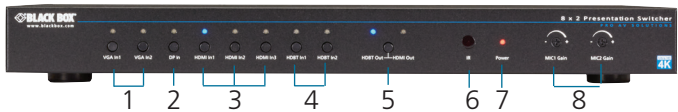


Figure 2-1. Front panel.

Table 2-1. Front-panel components.

Number in Figure 2-1	Name	Description
1	VGA IN selection buttons and LEDs	Press the VGA IN selection button to select a VGA source as the input. LED lights when the corresponding VGA source is selected.
2	DisplayPort IN selection button and LED	Press the DisplayPort IN selection button to select a DisplayPort source as the input. LED lights when the corresponding DisplayPort source is selected.
3	HDMI IN selection buttons and LEDs	Press the HDMI IN selection button to select a HDMI source as the input. LED lights when the corresponding HDMI source is selected.
4	CATx IN selection buttons and LEDs	Press the CATx IN selection button to select a CATx source as the input. LED lights when the corresponding CATx source is selected.
5	Output Selection Button and LEDs	Press the button to select CATx OUT or HDMI OUT.
6	IR Receive window	Accepts the IR remote control signal of this device only.

Table 2-1 (continued). Front-panel components.

Number in Figure 2-1	Name	Description
7	Power LED	Lights on if the device is powered on.
8	Microphone Gain Adjustment Knob	MIC 1 GAIN: adjusts the gain of microphone 1. MIC 2 GAIN: adjusts the gain of microphon 2. <i>NOTE: The value range is 0 dB to 40 dB for both microphone gains.</i>

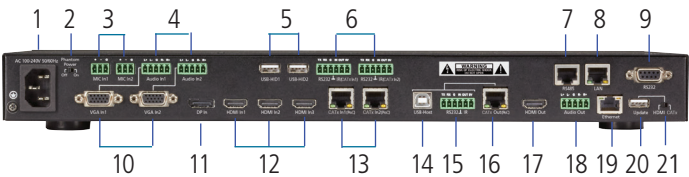


Figure 2-2. Back panel.

Table 2-2. Back-panel components.

Number in Figure 2-2	Component	Description
1	Power connector	Links to 100–240 VAC power supply.
2	Phantom Power switch	ON: Microphones connected to MIC IN 1 and MIC IN 2 can be powered by switcher. OFF: Microphones connected to MIC IN 1 and MIC IN 2 cannot be powered by switcher and require an outlet to receive power. For dynamic microphones, set the phantom power to off; for condenser microphones, set the phantom power to on. <i>Note: It is OFF by default.</i>
3	MIC IN Ports	Connects to microphones for audio input. Audio in these two ports can be input with any selected input source and can be output by mixing with audio from the input source or audio embedded.
4	Audio IN Ports	Connect to audio source devices, follow the VGA input sources.
5	USB HID Ports	Connects to USB devices such as keyboard and mouse.

Table 2-2 (continued). Back-panel components.

Number in Figure 2-2	Component	Description
6	RS-232 and IR Ports for CATx IN Ports	<p>RS-232 (CATx IN): Connects to a RS-232 device such as a computer for bi-directional RS-232 communication with an RS-232 device in a remote CATx transmitter.</p> <p>IR (CATx IN): Connects to an IR receiver and IR transmitter for bi-directional IR communication with IR sensors in a remote CATx transmitter.</p> <ul style="list-style-type: none"> • Pin IN, 5V, GND are used for an IR receiver to communicate with an IR transmitter in a remote CATx transmitter. • Pin OUT, 5V are used for an IR transmitter to communicate with an IR receiver in a remote CATx transmitter. • RS-232 and IR port share the GND pin.
7	RS-485 port	RS-485 control port
8	LAN port	Connects to an active IP network to control the switcher via LAN.
9	RS-232 port	Connects to an RS-232 device, such as PC or control system device, with a USB to UART cable or a direct serial cable.
10	VGA IN ports	Connects to a VGA source device.
11	DisplayPort IN ports	Connects to a DisplayPort source device.
12	HDMI IN ports	Connects to an HDMI source device.
13	CATx IN ports	Connects to CATx transmitters for source inputs; the switcher can provide electrical power to an CATx transmitter that supports PoC.
14	USB Host port	Connects to a USB host device.

Table 2-2 (continued). Back-panel components.

Number in Figure 2-1	Name	Description
15	RS-232 and IR ports for CATx OUT port	<p>RS-232 (CATx OUT): Connects to a RS-232 device such as a computer for bi-directional RS-232 communication with a RS-232 device in a remote CATx receiver.</p> <p>IR (CATx OUT): Connects to an IR receiver and an IR transmitter for bi-directional IR communication with IR sensors in a remote CATx receiver.</p> <ul style="list-style-type: none">• Pin IN, 5V, GND are used for an IR receiver to communicate with an IR transmitter in a remote CATx receiver.• Pin OUT, GND are used for an IR transmitter to communicate with an IR receiver in a remote CATx receiver.• RS-232 and IR port share the GND pin.
16	CATx OUT ports	Connects to an CATx receiver or video output, PoC function supported.
17	HDMI OUT port	Connects to an HDMI display device.
18	Audio OUT port	Connects to audio output device, such as an amplifier, a speaker, or an earphone for audio de-embedding output—audio from microphones and embedded audio or other video sources.
19	Ethernet port	Connects to an active IP network.
20	Update port	Connects to a USB flash drive to update the switcher.
21	HDMI/CATx Selection Switch	Switch to HDMI to update scaler MCU for HDMI; Switch to CATx to update scaler MCU for CATx.

2.5 Typical Application

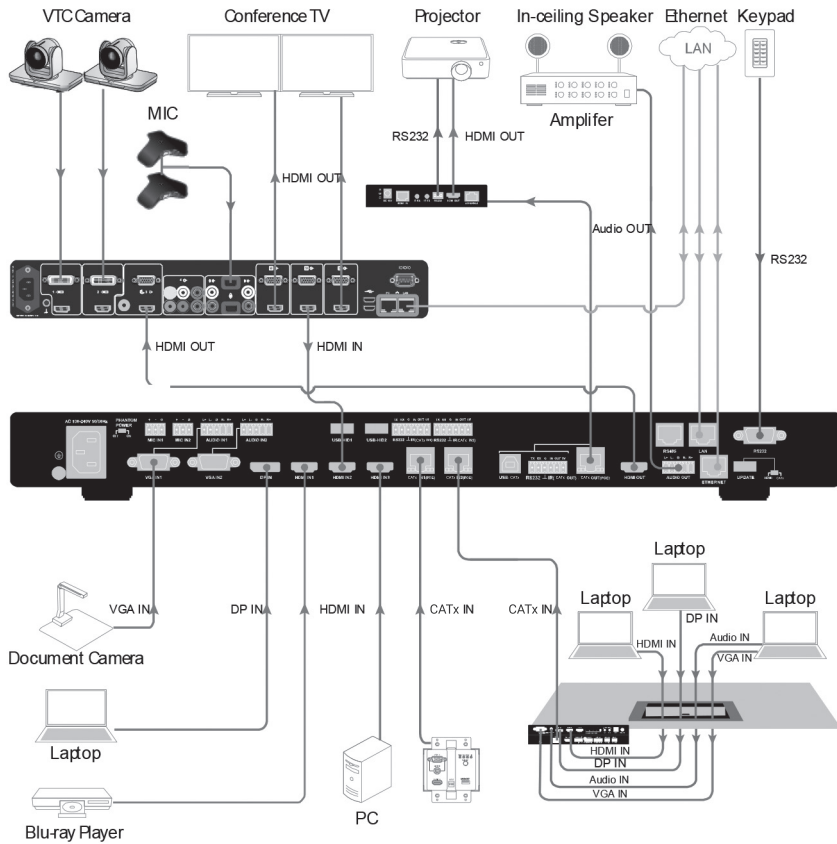


Figure 2-3. Conference Room example.

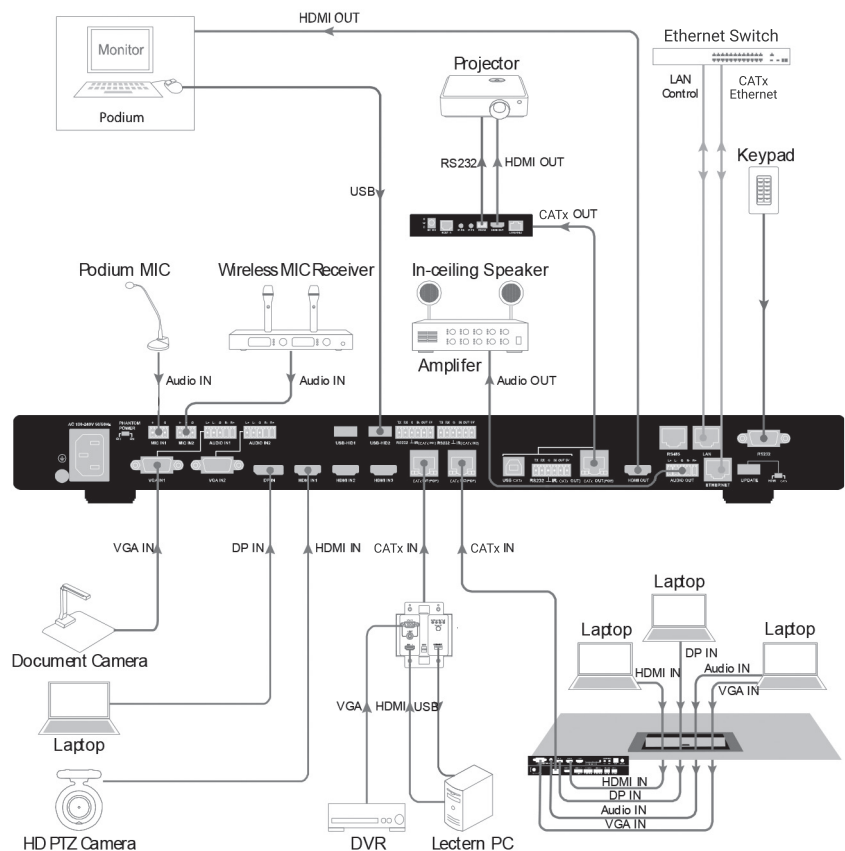
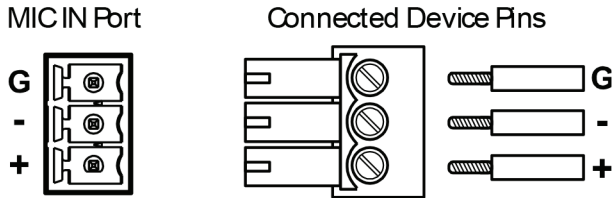


Figure 2-4. Classroom example.

3. Pin Assignments and Wiring

3.1 MIC IN

Connects to balanced microphone using the 3-pole, 3.5-mm captive screw connectors. Wire as shown below:



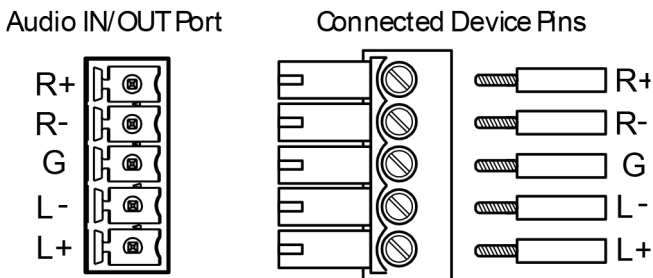
Balanced Mono Input

Figure 3-1. MIC IN wiring.

3.2 Audio IN/OUT

The diagram below shows how to wire the captive screw audio connector. Insert the wires into the appropriate openings in the direct insertion connector. Tighten the screws on the side to fasten the wires.

Connect one end of a 5-wire audio cable to this 5-pole 3.5 mm direct insertion connector. Connect the free end of the same cable from the device to any compatibly wired unit, such as an amplifier.



Balanced Stereo Input/Output

Figure 3-2. Audio IN/OUT wiring.

3.3 USB

The switcher uses two kinds of USB connector: one is USB Female Type A, and the other one is USB Female Type B.

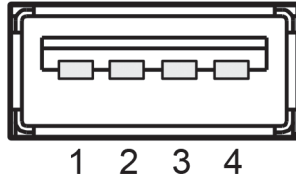


Figure 3-3. USB Type A female connector and pinning.

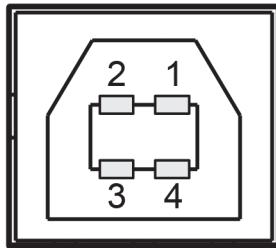


Figure 3-4. USB Type B female connector and pinning.

3.4 RS-232/IR

RS-232 (CATx IN): Connects to an RS-232 device, such as a computer for bidirectional RS-232 communication with an RS-232 device in a remote CATx transmitter.

IR (CATx IN): Connects to an IR receiver and IR transmitter for bidirectional IR communication with IR sensors in a remote CATx transmitter.

- Pin IN, 5V, GND are used for an IR receiver to communicate with an IR transmitter in a remote CATx transmitter
- Pin OUT, 5V are used for an IR transmitter to communicate with an IR receiver in a remote CATx transmitter.
- The RS-232 port and the IR port share the GND pin.

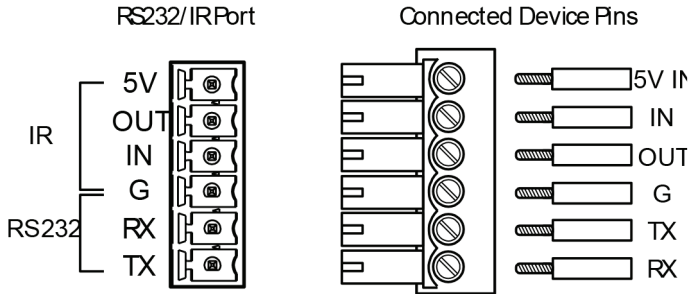


Figure 3-5. RS-232/IR pinning.

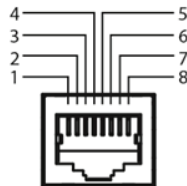
3.5 RS-485

The RS-485 control port can be used for connection to devices with RS-485 communication. This allows serial communication to be extended to devices at distances up to 4000 feet (1250 m) by balancing the TX and RX lanes.

The default settings for the RS-485 port are:

- 4-wire full duplex
- 57600 baud
- Data Bits: 8
- Stop Bits: 1
- Parity: None

RS485 8P8C Female Pinout



- Pin 1 - TX+ (Transmit Data+)
- Pin 2 - TX- (Transmit Data-)
- Pin 3 - GND (Ground)
- Pin 4 - 5V+ (5volt DC + Output)
- Pin 5 - 5V+ (5volt DC + Output)
- Pin 6 - GND (Ground)
- Pin 7 - RX+ (Receive Data+)
- Pin 8 - RX- (Receive Data-)

Figure 3-6. RS-485 connector pinning.

3.6 LAN/Ethernet

RJ-45 Ethernet connector—Connects to an Ethernet network with a straight-through cable.



Figure 3-7. RJ-45 connector pinning.

CAT5e/6 Wiring Guide

The quality of termination for every RJ-45 is essential. Poor termination leads to intermittent performance and longer install times.

The figure shows the recommended termination of TP cables with RJ-45 connectors in accordance with TIA/EIA-T568B wiring standard.

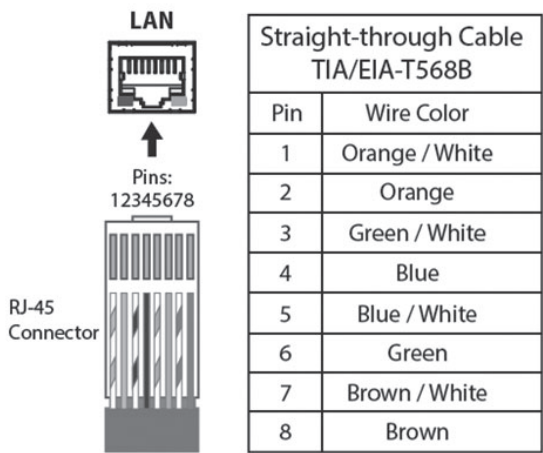


Figure 3-8. Twisted-pair cable termination.

3.7 RS-232

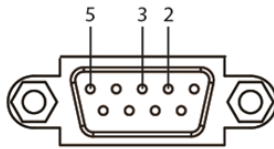
The RS-232 control port requires a standard straight-through serial cable for operation.

The settings for the the RS-232 port are:

- Baud Rate: 57600
- Data Bits: 8
- Parity: None
- Stop Bits: 1

Only Pin 2, Pin 3, and Pin 5 are used on the RS-232 serial interface.

RS232 DB9 Female Pinout



Pin 2 - TX (Transmit Data)
Pin 3 - RX (Receive Data)
Pin 5 - GND (Ground)

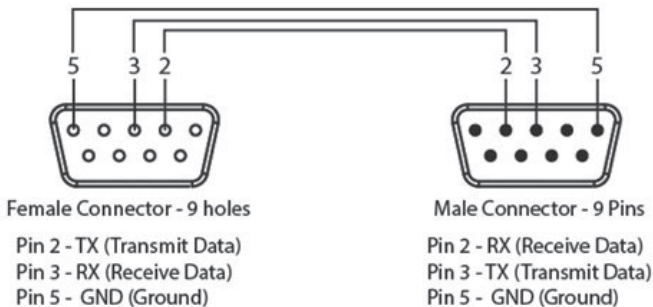


Figure 3-9. RS-232 DB9 female and male connectors and pinning.

3.8 CATx



Figure 3-10. CATx connector.

Table 3-1. LEDs on the CATx connector.

Link LED (green) settings	HDCP LED (amber) settings
ON: A valid link is established. Blinking/OFF: Link is unstable.	ON: Transmitting HDCP video. Blinking: Transmitting non-HDCP video.

4. Remote Handset

You can use the IR remote handset to choose the input source for output, power on/off the switcher.

NOTE: Make sure that the IR remote handset is pointed directly at the IR receiver window.

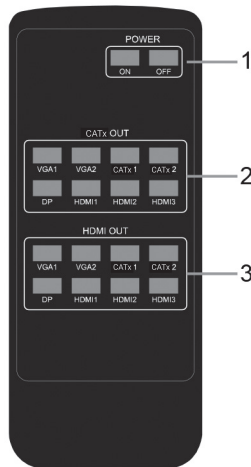


Figure 4-1. Remote handset.

Table 4-1. Remote handset buttons functions.

Number	Button Name	Function
1	POWER ON/OFF	ON: Press this button to output video normally. OFF: Press this button to enter into stand-by mode, the switcher doesn't output any video.
2	CATx OUT	Choose an input source for CATx OUT. If you press VGA1, that means VGA1 and CATx OUT are routed.
3	HDMI OUT	Choose an input source for HDMI OUT. If you press VGA1, that means VGA1 and HDMI OUT are routed.

5. Web UI

Use the Web interface to change settings and control the switcher. The IP address of the switcher is 192.168.10.1 by default.

5.1 Access the Web Interface

Step 1. To use the Web interface, connect a computer to the LAN port of the switcher using a straight-through UTP cable.

Step 2. Set a static IP address for the computer.

Go to Control Panel —> Network and Internet —> Network Connections —> Local Area Connections, right click on it, choose Properties.

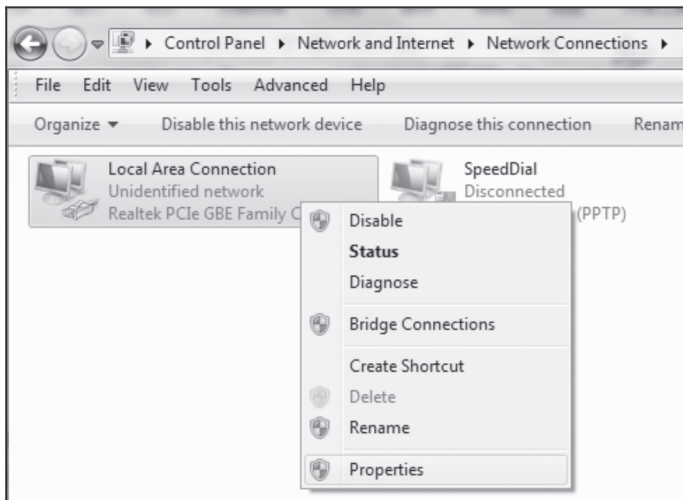


Figure 5-1. Web interface screen.

Double-click Internet Protocol Version 4 (TCP/IPv4).

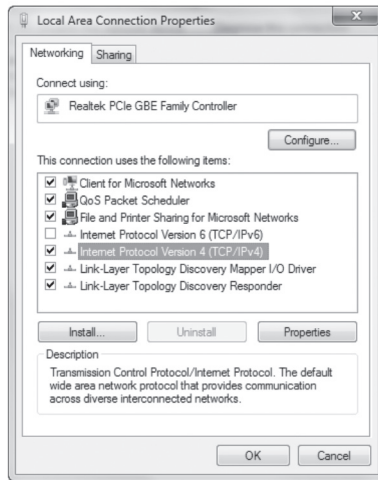


Figure 5-2. IP v4 screen.

Choose Use the following IP address, input 192.168.10.100 as the IP address, and 255.255.255.0 as the Subnet mask, and then click on OK; click on OK again.

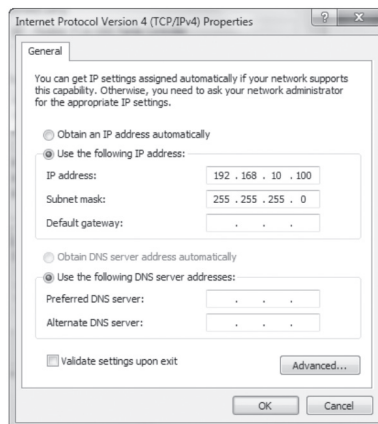


Figure 5-3. I P address screen.

NOTE: The IP address of the computer and The should be in the same network segment. the switcher's IP address is 192.168.10.1, so the computer's IP should be 192.168.10.X (X denotes 2–255).

Step 3. Type the IP address 192.168.10.1 into a web browser (as seen below).

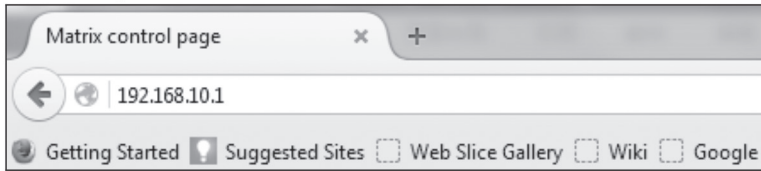


Figure 5-4. Type in the IP address.

NOTE: Chrome, Safari, Firefox, Opera and IE10+ are supported. Make sure the web browser is the latest version.

A login screen will appear:

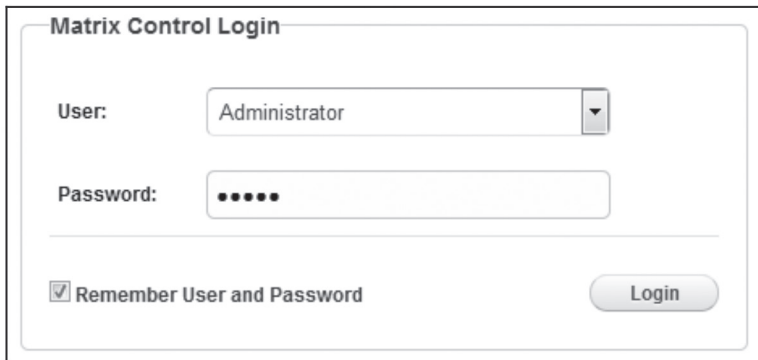


Figure 5-5. Login screen.

The default password for Administrators is "admin." The default password for General users is "0000000000" (ten zeroes).

After logging in, the main screen appears. It contains four submenus:

1. Matrix Control
2. Matrix Setting
3. Matrix Status
4. Administrator Setting

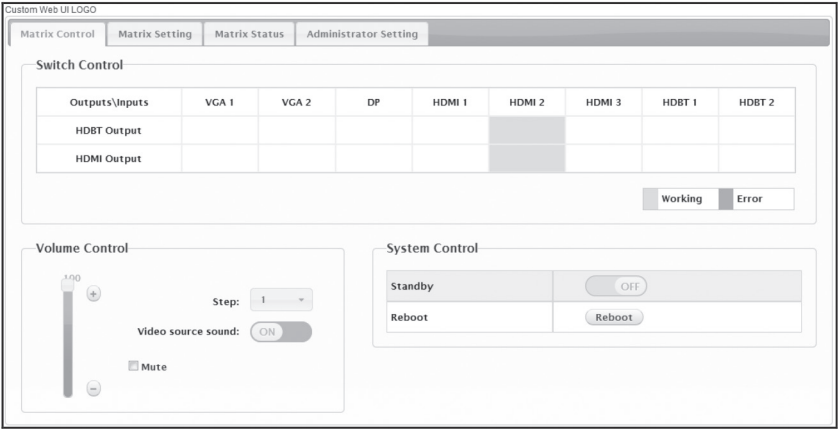


Figure 5-6. Main screen.

5.2 Web Interface Introduction

Matrix Control

The Matrix Control submenu includes three parts: Switch Control, Volume Control, and System Control.

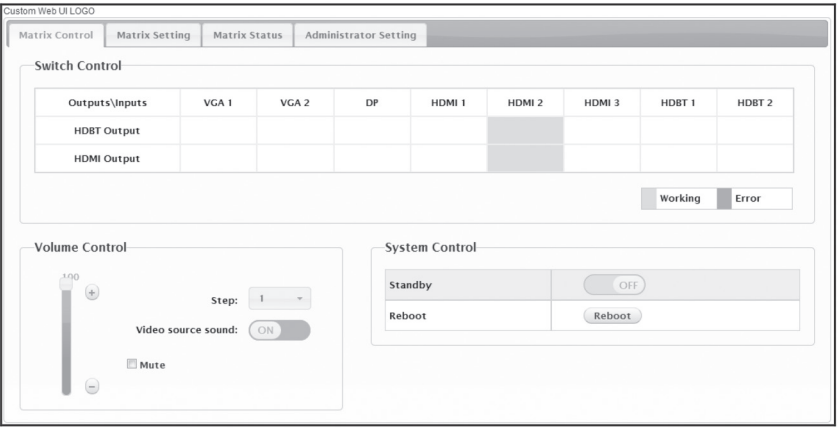


Figure 5-7. Matrix Control submenu.

Switch Control

The Switch Controls enable you to select the output port (display) and input port (source) for specific combinations of displays and sources within the matrix.

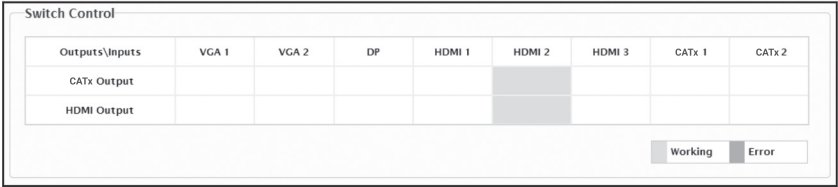


Figure 5-8. Switch Control screen.

The green bar represents that input and output are routed.

The white bar represents that input and output are not routed. Click the white bar, it will become green, which represents that input and output are routed.

The red bar represents error (such as device offline), or input and output routing are being processed.

NOTE: Although the bars are shown grayscale in this manual, your actual software will be in color.

Volume Control

Users can choose the volume adjustment value, enable/disable Video source sound, and enable/disable Mute function.



Figure 5-9. Volume Control screen.

The adjustment values are 1, 2, 5, 10, 15, and 20.

System Control

System Control allows user to enable/disable standby mode and reboot the switcher.

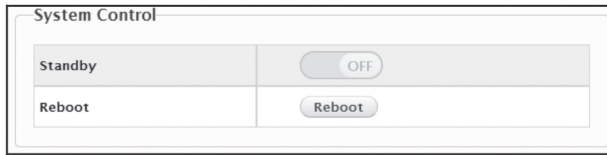


Figure 5-10. System Control screen.

Standby ON means the switcher is in standby mode;

Standby OFF means the switcher is in working mode.

Matrix Setting

The Matrix Setting submenu is used to perform the following tasks:

- Video Setting
- HDCP Setting
- EDID Setting

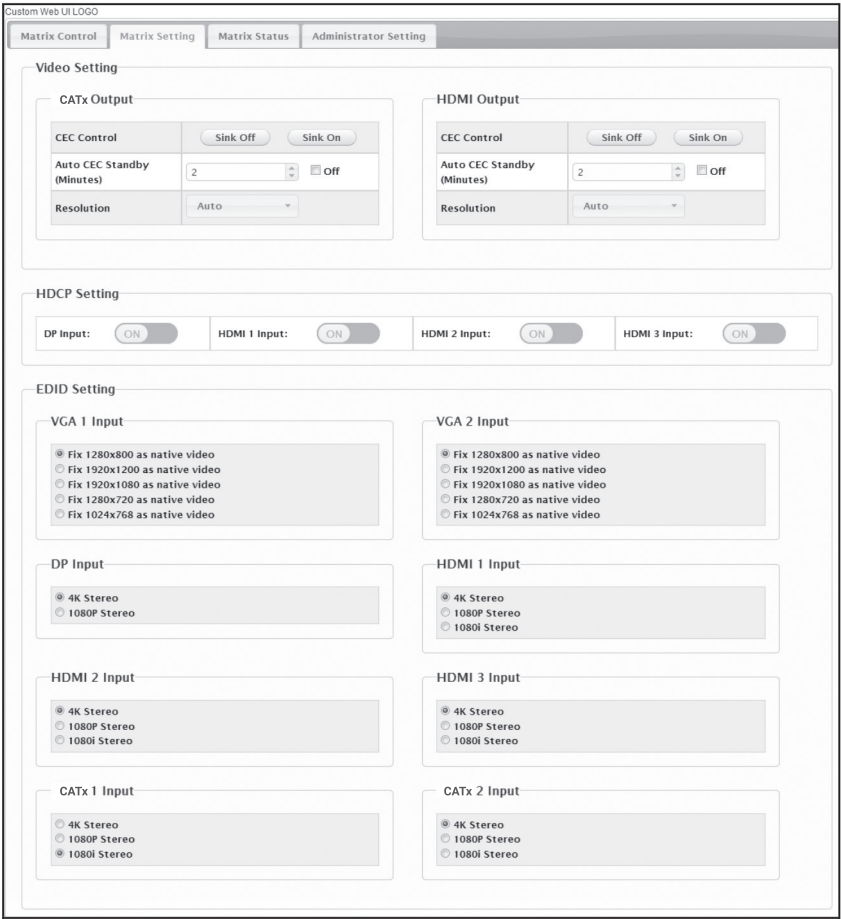


Figure 5-11. Matrix Setting screen.

Video Setting

In the Video Setting column, you can set the CEC control function, auto CEC standby time, and CATx OUT and HDMI OUT resolution.

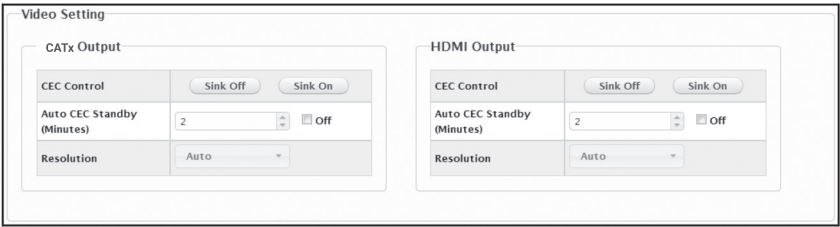


Figure 5-12. Video Setting screen,

CEC Control: click Sink Off to power off the display connected to CATx OUT/HDMI OUT.

Click Sink On to power on the display connected to CATx OUT/HDMI OUT.

Auto CEC Standby: set the auto CEC standby time. For example, if the time is 2 minutes, disconnect the source and the display will power off automatically after 2 minutes. The maximum CEC standby interval time is 30 minutes.

NOTE: This function is valid if only the display supports CEC control.

Resolution: set the CATx OUT/HDMI OUT resolution. It supports 3840 x 2160 @ 30, 1920 x 1200 @ 60, 1920 x 1080 @ 60, 1600 x 1200 @ 60, 1366 x 768 @ 60, 1280 x 1024 @ 60, 1280 x 720 @ 60, 1280 x 800 @ 60, 1024 x 768 @ 60. It is Auto by default.

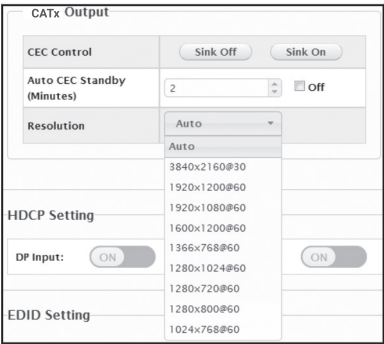


Figure 5-13. Resolution screen.

HDCP Setting

In HDCP Setting column, user can enable/disable the HDCP of DisplayPort IN port, HDMI1/2/3 IN port.



Figure 5-14. HDCP Setting screen.

ON: Follow the HDCP status of source.

OFF: Non-HDCP video input.

EDID Setting

In he EDID Setting column, users can set the EDID of the eight input ports.

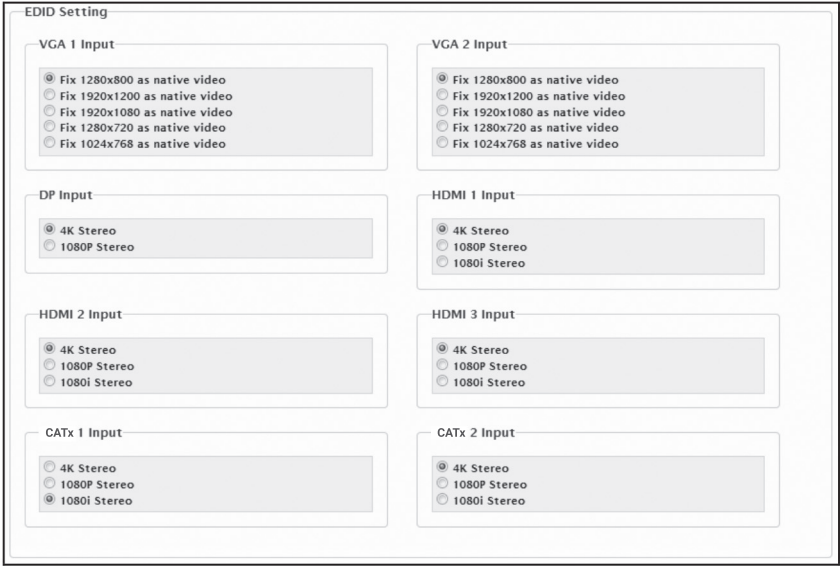


Figure 5-15. EDID Setting screen.

Matrix Status

The Matrix Status submenu displays the following information:

- Current Active Output (CATx/HDMI)
- Current Active Input
- MIC (Phantom Power) Status

- Version number of main MCU, slave MCU, LED MCU, scaler MCU 1, scaler MCU 2, and Web UI
- Log

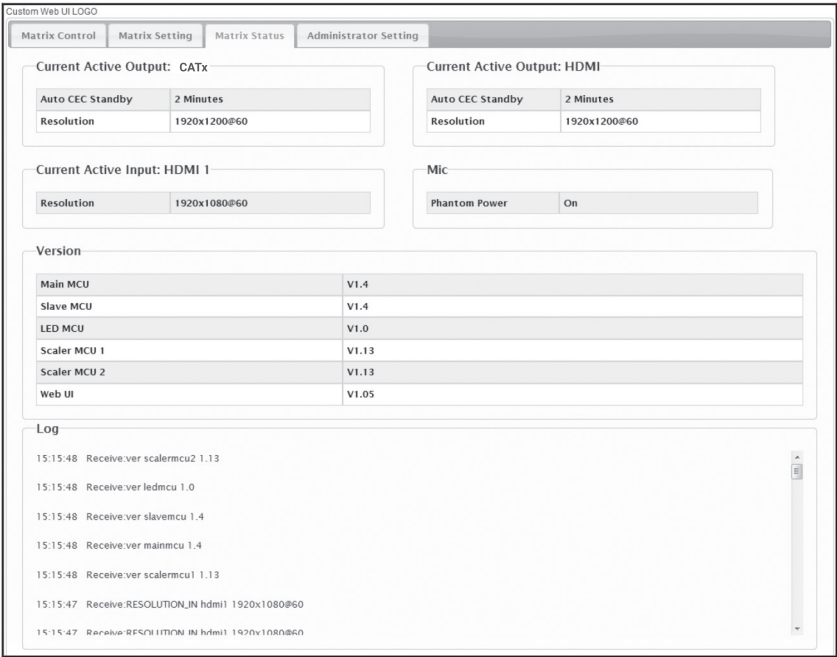


Figure 5-16. Matrix Status screen.

NOTE: Phantom Power is off by default. If the Phantom Power is on, the switcher powers MIC.

Administrator Setting

The Administrator Setting submenu includes the following parts:

- Change Admin Password
- Reset User Password
- Network
- Custom Welcome Menu
- Update Guide

NOTE: Only the Administrator can access this submenu.

Custom Web UI LOGO

Matrix Control

Matrix Setting

Matrix Status

Administrator Setting

Change Admin Password

Old Password:

New Password:

Confirm New Password:

Note: Password must be 4 to 16 characters in length, alphanumeric only.

Apply

Reset User Password

Password:

Note: Password must be 4 to 16 characters in length, alphanumeric only.

Apply

Network

DHCP

Static

Static IP

IP Address:

192.168.10.1

Subnet Mask:

255.255.255.0

Default Gateway:

192.168.10.254

Note: Matrix LAN Module will automatically reboot after changing Network setting.

Apply

Custom Welcome Menu

Browse

Note: Image format must be .jpg, and cannot exceed 2M

Apply

Update Guide

Main MCU	Start
Slave MCU	Start
LED MCU	Start
Scaler MCU	Start
Web UI	Start

System

Factory Reset

Figure 5-17. Administrator Setting screen.

Change Admin Password

In the Change Password column, you can modify the login password for Administrator.

Change Admin Password

Old Password:

New Password:

Confirm New Password:

Note: Password must be 4 to 16 characters in length, alphanumeric only.

Apply

Figure 5-18. Change Admin Password screen.

Reset User Password

In the Reset User Password column, you can modify the login password for User.

Reset User Password

Password:

Note: Password must be 4 to 16 characters in length, alphanumeric only.

Apply

Figure 5-19. Reset User Password screen.

Network

In the Network column, you can modify the network settings.

Network

DHCP

Static

Static IP

IP Address:

192.168.10.1

Subnet Mask:

255.255.255.0

Default Gateway:

192.168.10.254

Note: Matrix LAN Module will automatically reboot after changing Network setting.

Apply

Figure 5-20. Network Settings screen.

It is in Static mode by default.

If you choose DHCP, make sure the switcher can obtain an IP address from a DHCP server such as a router.



Figure 5-21. DHCP screen.

Custom Welcome Menu



Figure 5-22. Custom Welcome screen.

Click the Browse button to browse the LOGO file, and then click Apply.

NOTE: The recommend size is 1024 x 100 pixels.

Update Guide

In the Update Guide column, you can update the Main MCU, Slave MCU, LED MCU, Scaler MCU, and Web UI.

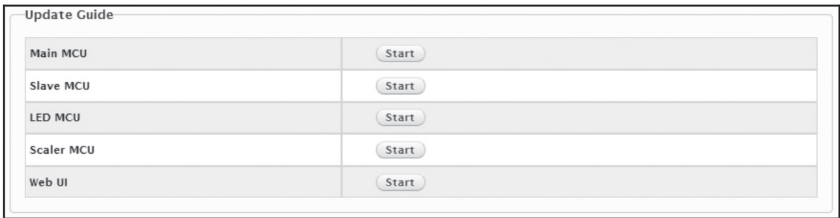


Figure 5-23. Update Guide screen.

Main MCU Update

Step 1. Click on the Start button in Main MCU column.

Upload File

BANK 0(.h00):

Browse

BANK 1(.h01):

Browse

BANK 2(.h02):

Browse

Note: Please upload the required file

Upload

>> Next

✕ Cancel

Figure 5-24. Main MCU Update screen.

Step 2. Browse for the update file.

Upload File

BANK 0(.h00):

MS0802-N001-000-MASTAR-V1.5.h00

Browse

BANK 1(.h01):

MS0802-N001-000-MASTAR-V1.5.h01

Browse

BANK 2(.h02):

MS0802-N001-000-MASTAR-V1.5.h02

Browse

Note: Please upload the required file

Upload

>> Next

✕ Cancel

Figure 5-25. Browser for Update.

Step 3. Click on the Upload button.

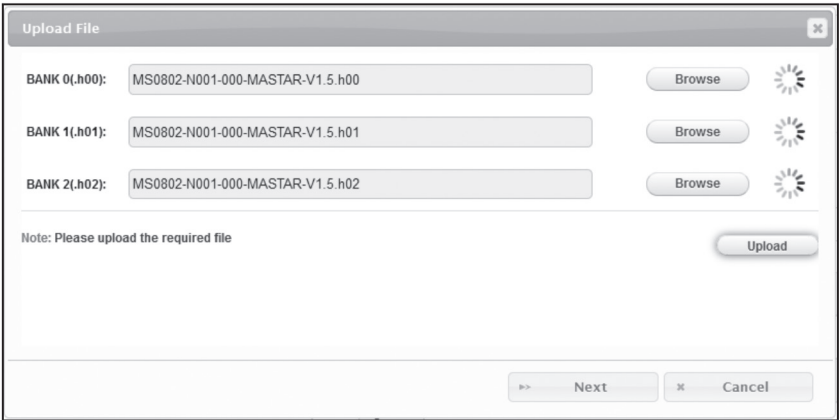


Figure 5-26. Upload button.

Step 4. Wait for a while, then you will see message “Your file has successfully uploaded.”



Figure 5-27. Confirm upload screen.

Step 5. Click on the Next button.

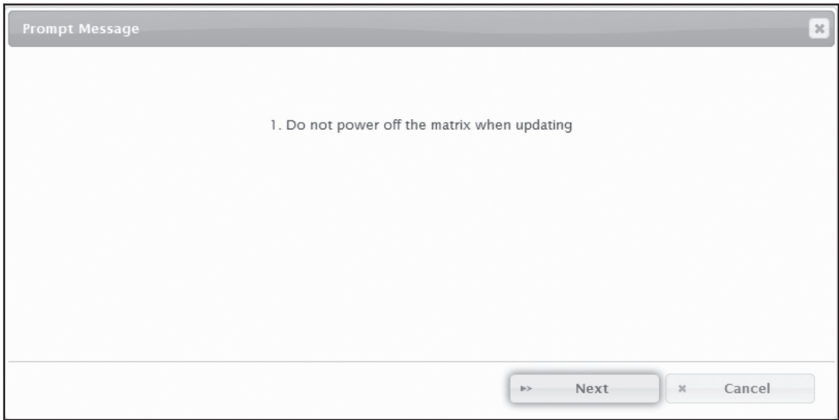


Figure 5-28. Next button.

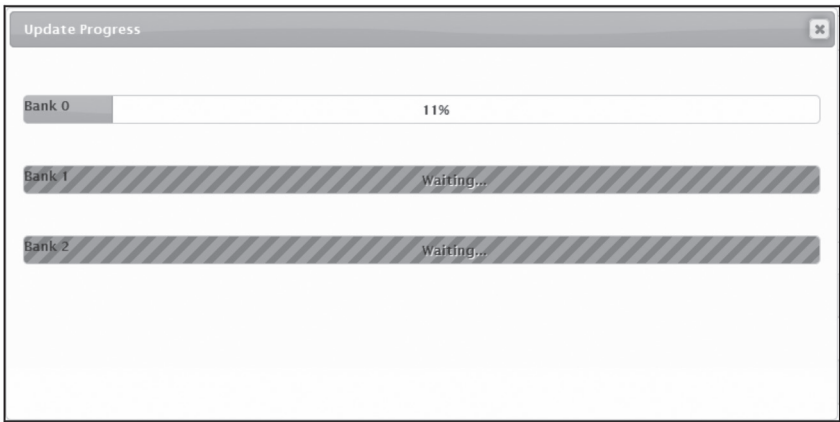


Figure 5-29.

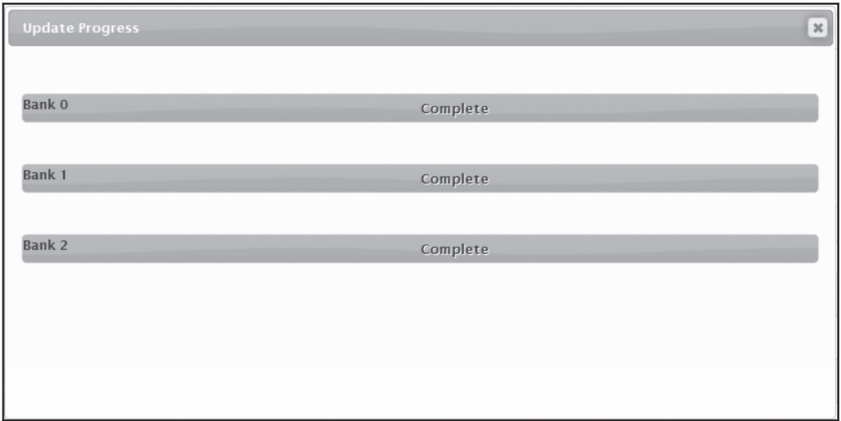


Figure 5-30.

Step 6. Users will see the message “It has completed the update” if the update is successful.

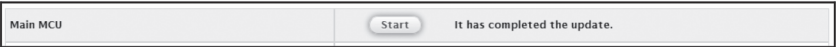


Figure 5-31. Update completed message.

Slave MCU Update

Click on the Start button.



Figure 5-32. Slave MCU update screen.

The rest of the steps are similar to update the Main MCU.

LED MCU Update

Click on the Start button, and browse for the update file, click on Upload button, then follow the step-by-step instructions.

Scaler MCU Update

Step 1. Click on the Start button, and the following window appears.

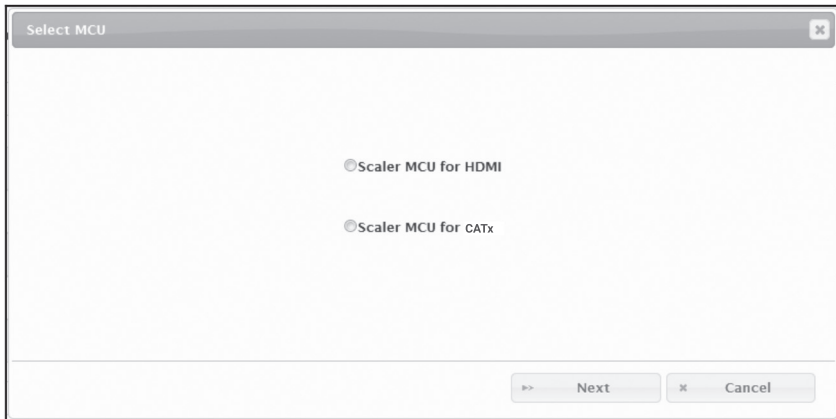


Figure 5-33. Scaler MCU update screen.

Step 2. Using Scaler MCU for HDMI as an example, click on Next button.



Figure 5-34. Scaler MCU for HDMI example.

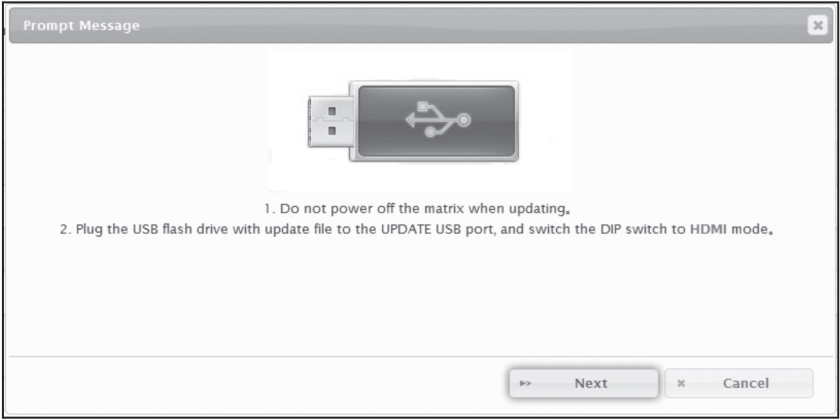


Figure 5-35.

Step 3. Click on the Next button.

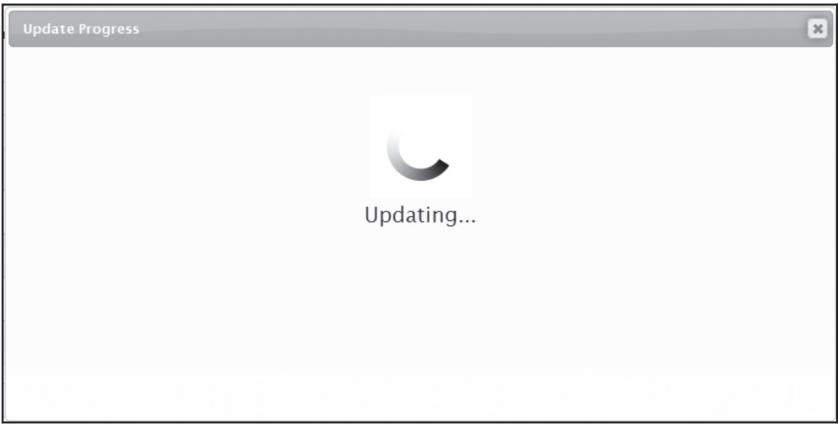


Figure 5-36. Updating screen.

Step 4. Update is completed.

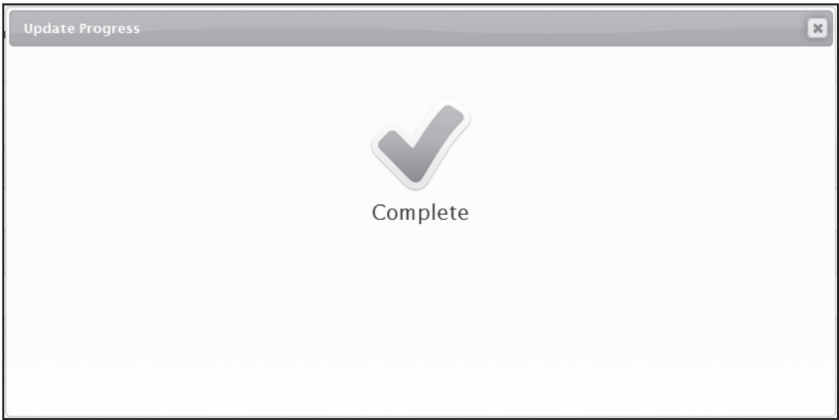


Figure 5-37. Update completed screen.

Web UI Update

Step 1. Click on the Start button.

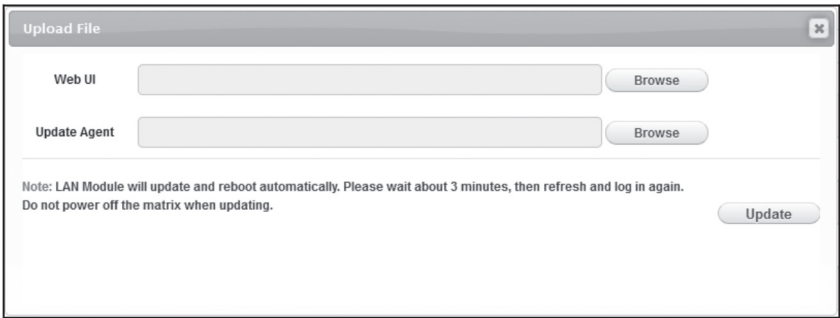


Figure 5-38. Web UI update screen.

Step 2. Browse for the bin file and Update Agent.

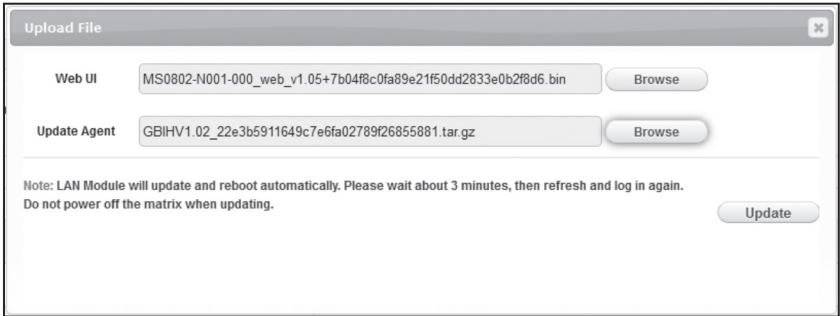


Figure 5-39. Update Agent screen.

Step 3. Click on the Update button.

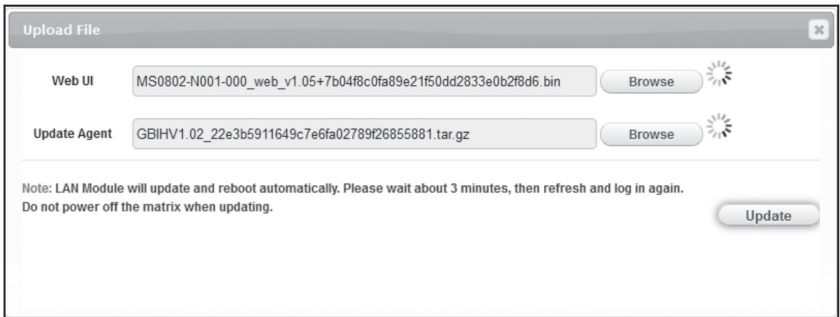


Figure 5-40. Update button.

Step 4. Users will see message “File uploading succeeded. Installing...” on the top right corner.

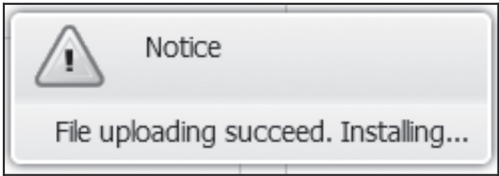


Figure 5-41. File uploading succeeded message.

Step 5. Wait for a while, and another message "LAN Module is restarting," will appear. Wait about 2 minutes, then refresh and "login again" appears on the top right corner. Follow the message to restart the switcher and log in to the web page again.

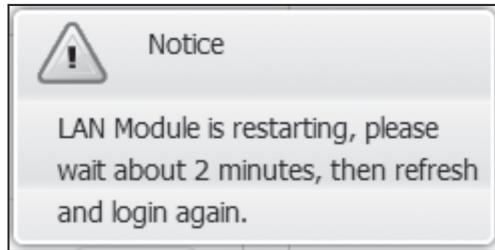


Figure 5-42. LAN Module restarting message,

System

Click on the Factory Reset button to restore the switcher to its initial default settings.



Figure 5-43. System Reset button.

NOTE: Reboot the switcher for this setting to take effect.

WARNING: This action will erase all previously saved data/settings—this cannot be undone.

6. Troubleshooting

Question: If the switcher's IP address is assigned by DHCP instead of Static IP, how do I find the switcher's IP address?

Answer:

Step 1. Run the SmartSetGUI tool to obtain the IP address. Click on the Search button, and the Matrix IP address will display.

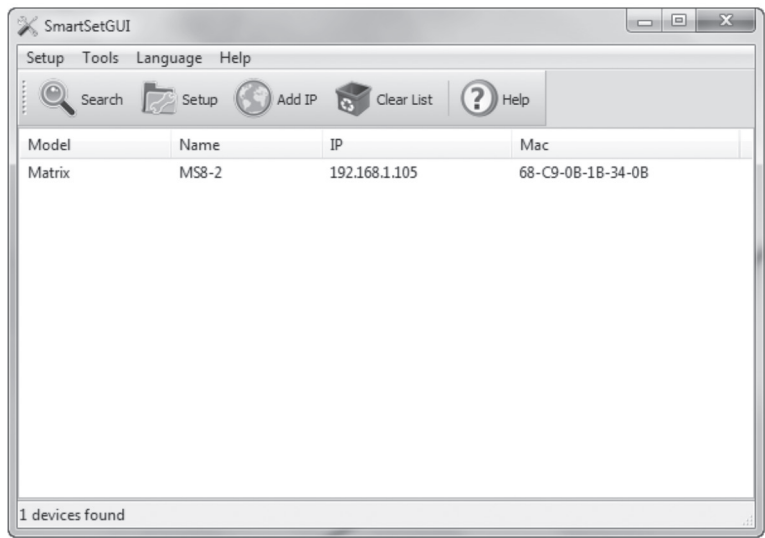


Figure 6-1. Matrix IP address screen.

Step 2. Type the IP address into a web browser.

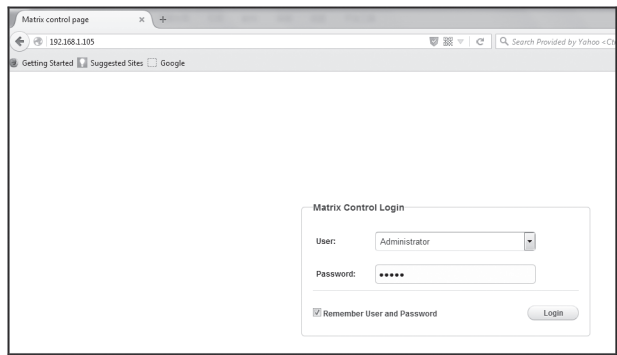


Figure 6-2. Type in IP address.

Question: How do I find out the login password for Web UI if I cannot remember it?

Answer: Use SmartSetGUI to reset the matrix.

Step 1. Highlight the Matrix, and then click Setup.

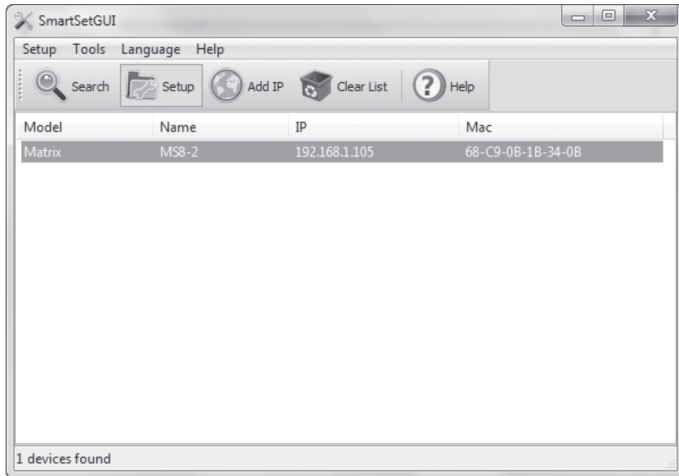


Figure 6-3. SmartSetGUI tool screen.

Step 2. Go to Device, and then click on Factory Default.

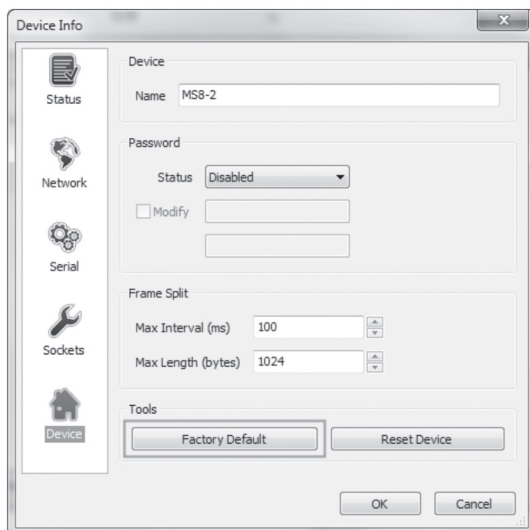


Figure 6-4. Factory Default button.

Step 3. A window pops up, click on Yes, then the matrix is restored to factory default settings.

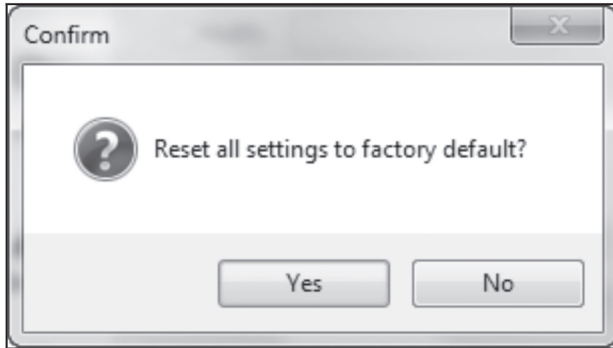


Figure 6-5. Reset to factory defaults dialog box.

Appendix. RS-232 Command Set

1. Connect the matrix to a PC via a UART-to-USB cable.
2. Run the UART tool on the PC, and configure the serial port as described in the following table.

Table 3-1. Serial port settings.

Serial Parameter	Setting
Baud rate	57600 bps
Data bits	8 bits
Parity bits	None
Stop bits	1 bit
Flow Control	None

NOTE: The data format is ASCII.

A.1 About the Command Set

Take Command SET SW in out[CR/LF] as an example:

1. [SET SW] denotes command keywords, not case-sensitive.
2. [in out] denotes parameters, not case-sensitive. In and out are different parameters, and incorrect parameters will not be recognized.
3. [out 1] denotes CATx OUT, [out 2] denotes HDMI OUT.
4. [CR/LF] is required at the end of all commands.
5. The space character is not case-sensitive.

A.2 Commands

IDX	Function	Command	Response	Parameters Description	Example
1	Switch input for output	SET SW in out[CR/LF]	SW in out[CR/LF]	in = {hdmi1,hdmi2,hdmi3,dp,vga1,vga2,catx1,catx2}; out = {out1,out2};	Command: SET SW hdmi1 out1[CR/LF] Response: SW hdmi1 out1[CR/LF]
2	Get which input mapping to the indicate output	GET MP out[CR/LF]	MP in out[CR/LF]	in= {hdmi1,hdmi2,hdmi3,dp,vga1,vga2,catx1,catx2}; out = {out1,out2};	Command: GET MP out1[CR/LF] Response: MP hdmi1 out1[CR/LF]
3	Get which output mapping to all input	GET MP all[CR/LF]	MP in out[CR/LF] MP in out[CR/LF]	in = {hdmi1,hdmi2,hdmi3,dp,vga1,vga2,catx1,catx2}; out = {out1,out2}; all = {all};	Command: GET MP all [CR/LF] Response: MP hdmi1 out1[CR/LF] MP hdmi2 out2[CR/LF]
4	Set CEC POWER ON/ OFF	SET CECPOWER_ ONOFF out prm[CR/LF]	CECPOWER_ ONOFF out prm[CR/LF]	prm = {on,off} out = {out1,out2};	Command: SET CECPOWER_ ONOFF out1 on[CR/LF] Response: CECPOWER_ ONOFF out1 on[CR/LF]
5	Get CEC POWER ON/ OFF Status	GET CECPOWER_ ONOFF out [CR/LF]	CECPOWER_ ONOFF out prm[CR/LF]	prm = {on,off} out = {out1,out2};	Command: GET CECPOWER_ ONOFF out1[CR/LF] Response: CECPOWER_ ONOFF out1 on[CR/LF]
6	Set CEC POWER Delay Time (This command is valid when there is no active signal input)	SET CECPOWER_ DELAY out prm[CR/LF]	CECPOWER_ DELAY out prm[CR/LF]	out = {out1,out2}; prm = {0,1,2,3,...,off}// according to the actual time counter, 0 means 0 means, 1 means 1 minute , 2 means 2 minutes and so on, it is 2 minutes by default, the Max wait time is 30 minutes; off means when no active signal, the unit will not auto power off.	Command: SET CECPOWER_ DELAY out1 3[CR/LF] Response: CECPOWER_ DELAY out1 3[CR/LF]
7	Get CEC POWER Delay Time	GET CECPOWER_ DELAY out [CR/LF]	CECPOWER_ DELAY out prm[CR/LF]	out = {out1,out2}; prm = {0, 1,2,3,...,off}// according to the actual time counter,1 means 1 minute, 2 means 2 minutes and so on, it is 2 minutes by default, the Max wait time is 30 minutes; off means when no active signal, the unit will not auto power off.	Command: GET CECPOWER_ DELAY out1 [CR/LF] Response: CECPOWER_ DELAY out1 3[CR/LF]
8	Set Audio Extraction on/off	SET AUDIOEXTRACT prm[CR/LF]	AUDIOEXTRACT prm[CR/LF]	prm = {on,off} The Audio Extraction is on by default.	Command: SET AUDIOEXTRACT on[CR/LF] Response: AUDIOEXTRACT on[CR/LF]
9	Get Audio Extraction status	GET AUDIOEXTRACT [CR/LF]	AUDIOEXTRACT prm[CR/LF]	prm = {on,off} The Audio Extraction is on by default.	Command: GET AUDIOEXTRACT[CR/LF] Response: AUDIOEXTRACT on[CR/LF]
10	Get Phantom Power status	GET MICPWR[CR/LF]	MICPWR prm[CR/LF]	prm = {on,off}	Command: GET MICPWR[CR/LF] Response: MICPWR on [CR/LF]
11	Adjust Volume Gain	SET VOLUME_ DATA aout prm[CR/LF]	VOLUME_ DATA aout prm[CR/LF]	aout = {audioout}; prm = {0~100}	Command: SET VOLUME_ DATA audioout 50[CR/LF] Response: VOLUME_ DATA audioout 50[CR/LF]

Appendix: RS-232 Command Set

IDX	Function	Command	Response	Parameters Description	Example
12	Get current Volume Gain	GET VOLGAIN_DATA aout[CR/LF]	VOLGAIN_DATA aout prm[CR/LF]	aout = {audioout}; prm = {0-100}	Command: GET VOLGAIN_DATA audioout[CR/LF] Response: VOLGAIN_DATA audioout 50[CR/LF]
13	Enable/Disable Audio Mute	SET MUTE aout prm[CR/LF]	MUTE aout prm[CR/ LF]	aout = {audioout}; prm = {on,off}/ on means mute; off means unmute	Command: SET MUTE audioout on [CR/ LF]Response: MUTE audioout on [CR/ LF]
14	Get Audio Mute Status	GET MUTE aout[CR/ LF]	MUTE AOUT prm[CR/ LF]	AOUT = {audioout}; PRM = {on,off}/ on means mute; off means unmute	Command: GET MUTE audioout [CR/ LF]Response: MUTE audioout on [CR/ LF]
15	Set Output Resolution	SET RESOLUTION out prm[CR/LF]	RESOLUTION out prm[CR/LF]	prm = {3840x2160@30, 1920x1200@60, 1920x1080@60, 1600x1200@60, 1366x768@60, 1280x1024@60, 1280x720@60, 1280x800@60, 1024x768@60, auto} out = {out1,out2}	Command: SET RESOLUTION out1 auto[CR/LF] Response: RESOLUTION out1 auto[CR/ LF]
16	Get Output Resolution	GET RESOLUTION_ OUT out[CR/LF]	RESOLUTION_OUT out prm[CR/LF]	prm = {auto:3840x2160@30, auto:1920x1200@60, auto:1920x1080@60, auto:1600x1200@60, auto:1366x768@60, auto:1280x1024@60, auto:1280x720@60, auto:1280x800@60, auto:1024x768@60 fix:3840x2160@30, fix:1920x1200@60, fix:1920x1080@60, fix:1600x1200@60, fix:1366x768@60, fix:1280x1024@60, fix:1280x720@60, fix:1280x800@60, fix:1024x768@60} out = {out1,out2}	Command: GET RESOLUTION_OUT out1[CR/LF] Response: RESOLUTION_OUT out1 auto:3840x2160@30[CR/LF] RESOLUTION_OUT out1 fix:3840x2160@30[CR/LF]
17	Get Input Resolution	GET RESOLUTION_ IN in [CR/LF]	RESOLUTION_IN in prm[CR/LF]	prm = {3840x2160@30, 1920x1200@60, 1920x1080@60, 1600x1200@60, 1366x768@60, 1280x1024@60, 1280x720@60, 1280x800@60, 1024x768@60} in = {hdmi1,hdmi2,hdmi3,dp,vga 1,vga2,cats1,cats2}	Command: GET RESOLUTION_IN hdmi1[CR/LF] Response: RESOLUTION_IN hdmi1 3840x2160@30[CR/LF]

Appendix: RS-232 Command Set

18	Set Output HDCP	SET HDCP out prm[CR/LF]	HDCP out prm[CR/LF]	prm = {auto:3840x2160@30, auto:1920x1200@60, auto:1920x1080@60, auto:1600x1200@60, auto:1366x768@60, auto:1280x1024@60, auto:1280x720@60, auto:1280x800@60, auto:1024x768@60 fix:3840x2160@30, fix:1920x1200@60, fix:1920x1080@60, fix:1600x1200@60, fix:1366x768@60, fix:1280x1024@60, fix:1280x720@60, fix:1280x800@60, fix:1024x768@60} out = {out1,out2}	Command: GET RESOLUTION_OUT out1[CR/LF] Response: RESOLUTION_OUT out1 auto:3840x2160@30[CR/LF] RESOLUTION_OUT out1 fix:3840x2160@30[CR/LF]
19	Enable/Disable HDCP for input port	SET HDCPSUPPORT_ONOFF in prm[CR/LF]	HDCPSUPPORT_ONOFF in prm[CR/LF]	prm = {on,off} in = {hdmi1,hdmi2,hdmi3,dp}	Command: SET HDCPSUPPORT_ONOFF hdmi1 on[CR/LF] Response: HDCPSUPPORT_ONOFF hdmi1 on[CR/LF]
20	Get HDCP status of input port	GET HDCPSUPPORT_ONOFF in [CR/LF]	HDCPSUPPORT_ONOFF in prm[CR/LF]	prm = {on,off} in = {hdmi1,hdmi2,hdmi3,dp}	Command: GET HDCPSUPPORT_ONOFF hdmi1[CR/LF] Response: HDCPSUPPORT_ONOFF hdmi1 on[CR/LF]
21	Set Input EDID	SET EDID in prm[CR/LF]	EDID in prm[CR/LF]	in = {hdmi1,hdmi2,hdmi3,dp,vga1,vga2,catx1,catx2}; prm = {fix1,fix2,fix3...} 1. If in = {vga1, vga2}, the range of prm is fix1- fix5: fix1: Fix 1280x800 as native video (Default) fix2: Fix 1920x1200 as native video fix3: Fix 1920x1080 as native video fix4: Fix 1280x720 as native video fix5: Fix 1024x768 as native video 2. If in = {dp}, the range of prm is fix1-fix2: fix1: 4K stereo fix2: 1080P stereo (Default) 3. If in = {hdmi1,hdmi2,hdmi3,catx1,catx2}, the range of prm is fix1-fix3: fix1: 4K stereo fix2: 1080P stereo(Default) fix3:1080i stereo	Command: SET EDID hdmi1 fix1[CR/LF] Response: EDID hdmi1 fix1[CR/LF]

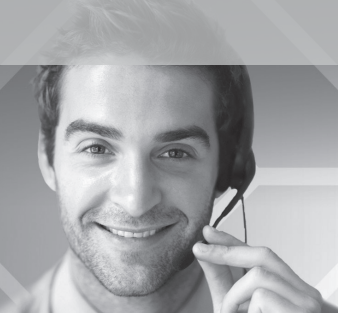
22	Get All Input EDID Status	GET EDID all [CR/LF]	EDID in prm[CR/LF] EDID in prm[CR/LF] EDID in prm[CR/LF]	in = {hdmi1,hdmi2,hdmi3,d p,vga1,vga2,catx1,catx2}; prm = {fix1,fix2,fix3... } 1. If in = {vga1, vga2}, the range of prm is fix1- fix5: fix1: Fix 1280x800 as native video (Default) fix2: Fix 1920x1200 as native video fix3: Fix 1920x1080 as native video fix4: Fix 1280x720 as native video fix5: Fix 1024x768 as native video 2. If in = {dp}, the range of prm is fix1-fix2: fix1: 4K stereo fix2: 1080P stereo (Default) 3. If in = {hdmi1,hdmi2,hd mi3,catx1,catx2}, the range of prm is fix1-fix3: fix1: 4K stereo fix2: 1080P stereo(Default) fix3:1080i stereo	Command: GET EDID all[CR/LF] Response: EDID hdmi1 fix1[CR/LF] EDID hdmi2 fix1[CR/LF] EDID hdmi3 fix1[CR/LF]
23	Get one input EDID Status	GET EDID in [CR/LF]	EDID in prm[CR/LF]	in = {hdmi1,hdmi2,hdmi3,d p,vga1,vga2,catx1,catx2}; prm = {fix1,fix2,fix3... } 1. If in = {vga1, vga2}, the range of prm is fix1- fix5: fix1: Fix 1280x800 as native video (Default) fix2: Fix 1920x1200 as native video fix3: Fix 1920x1080 as native video fix4: Fix 1280x720 as native video fix5: Fix 1024x768 as native video 2. If in = {dp}, the range of prm is fix1-fix2: fix1: 4K stereo fix2: 1080P stereo (Default) 3. If in = {hdmi1,hdmi2,hd mi3,catx1,catx2}, the range of prm is fix1-fix3: fix1: 4K stereo fix2: 1080P stereo(Default) fix3:1080i stereo	Command: GET EDID hdmi1 [CR/LF] Response: EDID hdmi1 fix1[CR/LF]

Appendix: RS-232 Command Set

24	Factory Reset	RESET[CR/LF]	RESET[CR/LF]	—	Command: RESET[CR/LF] Response: RESET[CR/LF]
25	System Reboot	REBOOT[CR/LF]	REBOOT[CR/LF]	—	Command: REBOOT[CR/LF] Response: REBOOT[CR/LF]
26	Enable/Disable Standby	SET STANDBY_ONOFF prm[CR/LF]	STANDBY_ONOFF prm[CR/LF]	prm = {on,off}	Command: SET STANDBY_ONOFF on[CR/LF] Response: STANDBY_ONOFF on [CR/LF]
27	Get Standby Status	GET STANDBY_STATUS [CR/LF]	STANDBY_STATUS prm[CR/LF]	prm = {on,off}	Command: GET STANDBY_STATUS [CR/LF] Response: STANDBY_STATUS on [CR/LF]
28	Get selected target f/w version	GET VER target [CR/LF]	VER target prm[CR/LF]	target={mainmcu, slavemcu,scalermcu1,scalermcu2,ledmcu,webui} prm = {...}// according to actual f/w version	Command: GET VER mainmcu[CR/LF] Response: VER mainmcu 1.2[CR/LF]
29	Get All target f/w version	Get VER all[CR/LF]	VER target prm [CR/LF] VER target prm [CR/LF] VER target prm [CR/LF] VER target prm [CR/LF] VER target prm [CR/LF]	target={mainmcu, slavemcu,scalermcu1,scalermcu2,ledmcu,webui} prm = {...}// according to actual f/w version	Command: GET VER all [CR/LF] Response: VER mainmcu 1.2[CR/LF] VER slavemcu 1.3[CR/LF] VER scalermcu1 1.3[CR/LF] VER scalermcu2 1.3[CR/LF] VER ledmcu1.1[CR/LF]
30	Set USBLink	SET USBLINK prm[CR/LF]	USBLINK prm[CR/LF]	prm = {catx1, catx2} The USB is linked to CATx IN 1 by default.	Command: SET USBLINK catx1[CR/LF] Response: USBLINK catx1[CR/LF]
31	Get USBLink Status	GET USBLINK[CR/LF]	USBLINK prm[CR/LF]	prm = {catx1, catx2}	Command: GET USBLINK[CR/LF] Response: USBLINK catx1[CR/LF]

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

Tech support the
way it should be.



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



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.

© Copyright 2021. Black Box Corporation. All rights reserved. Black Box® and the Double Diamond logo are registered trademarks of BB Technologies, Inc. Any third-party trademarks appearing in this manual are acknowledged to be the property of their respective owners.