

## Multi-Input Digital Scaler with Audio

**Accepts various input formats and resolutions and scales to a specific output format and resolution.**

Has five different types of video inputs.  
Scaled digital output can be switched to any of the inputs.



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## Multi-Input Digital Scaler with Audio

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### 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 J 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.
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 física y la polarización del equipo no sea eliminada.

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13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
  - A: El cable de poder o el contacto ha sido dañado; u
  - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
  - C: El aparato ha sido expuesto a la lluvia; o
  - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
  - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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## 1. Specifications

Table 1-1. Supported Input Formats.

Resolution	DVI/HDMI	VGA (PC)	YPbPr
480i/576i	√	√	√
480p/576p	√	√	√
720p@(60/50)	√	√	√
1080i@(60/50)	√	√	√
1080p@(60/50)	√	√	√
VGA@(60/72/75/85)	√	√	
SVGA@(56/60/72/75/85)	√	√	
XGA@(60/70/75/85)	√	√	
SXGA@(60/75/85)	√	√	
UXGA@60	√	√	
WXGA@60(1280 x 800)	√	√	
WXGA+(1440 x 900)	√	√	
SXGA+(1400 x 1050)	√	√	
WSXGA@60(1680 x 1050)	√	√	
WUXGA@60(1920 x 1200)	√	√	

Table 1-2. Available Output Formats.

Resolution	DVI/HDMI
480i/576i	√
480p/576p	√
720p@(60/50)	√
1080i@(60/50)	√
1080p@(60/50)	√
VGA@60	√
SVGA@60	√

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Table 1-2 (Continued). Available Output Formats.

Resolution	DVI/HDMI
XGA@60	√
SXGA@60	√
UXGA@60	√
WXGA@60(1280 x 800)	√
WXGA+(1440 x 900)	√
SXGA+(1400 x 1050)	√
WSXGA@60(1680 x 1050)	√
WUXGA@60(1920 x 1200)	√

**Power Input:** 90–264 VAC, 50–60 Hz, 7 watts maximum

**Size:** 1.7"H x 8.3"W x 5.6"D (4.3 x 21.1 x 14.2 cm)

**Weight:** 2 lb. (0.9 kg)



### 2. Overview

#### 2.1 Introduction

The Multi-Input Digital Scaler with Audio is a multiple format switching video scaler. It has five different types of video inputs and a scaled digital output that can be switched to any of the inputs. The scaler accepts various input formats and resolutions and scales to a specific output format and resolution.

Inputs include: HDMI (up to 1080i/p), PC (from VGA [640 x 480] to WUXGA [1920 x 1200]), Component Video (SD and HD from 480p to 1080i/p), S-Video (NTSC or PAL), and Composite Video (NTSC or PAL).

You can specify the output format and resolution as either PC (VGA [640 x 480] to WUXGA [1920 x 1200]) or Component Video (YPbPr from 480i/p to 1080i/p).

You can control the scaler in many ways, including front-panel lighted push buttons (with on-screen display menus), using the included IR remote control, or via an RS-232 serial interface. The controls include input switching, setting the output resolution, picture adjustment (color, brightness, contrast, and sharpness), aspect ratio (standard, 16:9, or 4:3), digital noise reduction, 3-D comb filter On/Off, and many other advanced features.

Use the scaler in boardrooms, classrooms, digital signage, and high-end home theater applications. You can set its output for any LCD projector, PC LCD monitor, plasma, or HDTV displays.

#### 2.2 Features

- Complies with HDMI 1.2, HDCP 1.1, and DVI 1.0 standards.
- Includes five different inputs: HDMI, PC, YPbPr, S-Video, and Composite.
- Provides YPbPr HDTV outputs of 480i/p, 576i/p, 720p, 1080i, 1080p and up to WUXGA (1920 x 1200) PC resolutions.
- Converts digital and analog audio signals into digital format for output on HDMI combined with the video or separate coaxial S/PDIF.
- RS-232 interface allows control from an external device.
- OSD (on-screen display).
- Horizontal mirroring (X-axis flip).
- Easy-to-use IR remote control.
- EDID Support.

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- Reverse 3:2/2:2 pulldown provides clear and crisp de-interlacing of video originating from 24-fps film, such as DVD movies.
- Digital noise reduction.
- Brightness, color, contrast, sharpness and tint adjustment.
- Adaptive 3-D comb filter (3-D motion and 3-D de-interlacing) for Composite input ensures jitter-free picture.
- Compatible with NTSC and PAL video input.

## 2.3 What's Included

Your package should contain the following items. If anything is missing or damaged, contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

- Multi-Input Digital Scaler with Audio
- (1) VGA cable
- (1) 3 RCA to 3 RCA (R-G-B) cable
- (1) 3 RCA to 3 RCA (Y-R-W)
- (1) IR remote (includes batteries)
- (1) power supply
- (1) power cord
- This user's manual

## 2.4 Hardware Description

### 2.4.1 Front Panel

Figure 2-1 shows the Multi-Input Digital Scaler with Audio's front panel. Table 2-1 describes its components.

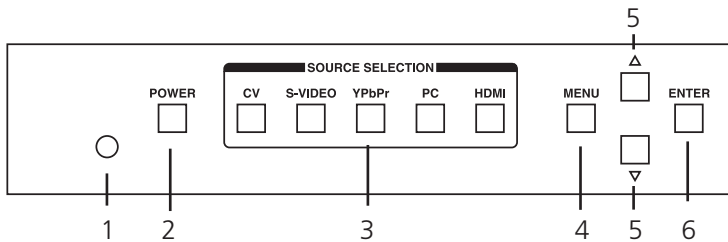


Figure 2-1. Front panel.

Table 2-1. Front-panel components.

Number	Component	Description
1	IR sensor	Infrared remote control sensor.
2	Power button	Press once to power on the unit; press again to power off the unit.
3	Source selection buttons	Press the appropriate button to output that connected audio and video selection.
4	Menu button	Press the menu button to bring up the OSD operation menu.
5	▼ or ▲	Press to toggle through various adjustment controls to alter the settings.
6	Enter	Press this button to confirm selections made in the OSD.

2.4.2 Back Panel

Figure 2-2 shows the Multi-Input Digital Scaler with Audio’s back panel. Table 2-2 describes its components.

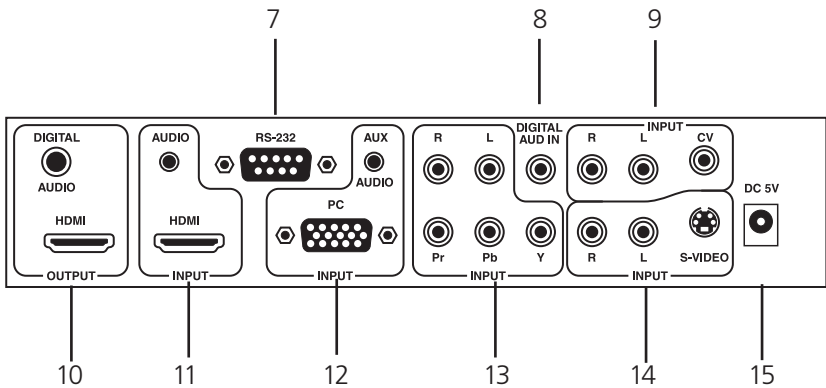


Figure 2-2. Back panel.

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Table 2-2. Back-panel components.

Number	Component	Description
7	DB9 connector	Links to RS-232 serial console.
8	Audio connector	Links to digital audio input.
9	Composite Video (CV)	Use a Composite video cable to connect the composite video output of the source equipment to the connector labeled “CV” on the back of the Video Scaler. The format can be NTSC or PAL. This channel accepts stereo audio input via (2) RCA connectors.
10	HDMI output	Use an HDMI cable to connect the HDMI input of the source equipment to the device. This channel accepts digital audio output via HDMI or stereo audio via a 3.5-mm audio jack.
11	HDMI input	Use an HDMI cable to connect the HDMI output of the source equipment to the device. This channel accepts digital audio input via HDMI or stereo audio via a 3.5-mm audio jack (TRS —Tip, Ring, and Sleeve).
12	PC input	Connect the source computer’s VGA output signal to the HD15 connector labeled “PC” on the device. This channel accepts stereo audio input via a 3.5-mm audio jack (TRS—Tip, Ring, and Sleeve).
13	YPbPr	Use a 3 RCA-to-3 BNC YPbPr cable to connect the YPbPr output of the source equipment to the device. The format can be NTSC or PAL. This channel accepts stereo audio input via (2) RCA connectors.
14	S-Video	Use an S-Video cable to connect the S-Video output of the source equipment to the connector labeled “S-Video” on the back of the Video Scaler. The format can be NTSC or PAL. This channel accepts stereo audio input via (2) RCA connectors.
15	Power connector	Links to power source.

### 3. Installation

The inputs and outputs on the back of the video scaler are shown in Figure 2-2 and described in Table 2-2.

#### 3.1 Connecting the Video Inputs

The video scaler accepts both TV and PC inputs and scales them to your desired high-resolution format output. The TV inputs are Composite video (CV), S-Video (mini DIN connector), YPbPr input (3 RCA connectors), PC (HD15), and HDMI.

#### 3.2 Connecting the Scaled Output

The output of the scaler can be connected to any HDMI compatible LCD, projector, or plasma display by using the appropriate cable, as described in Table 2-2.

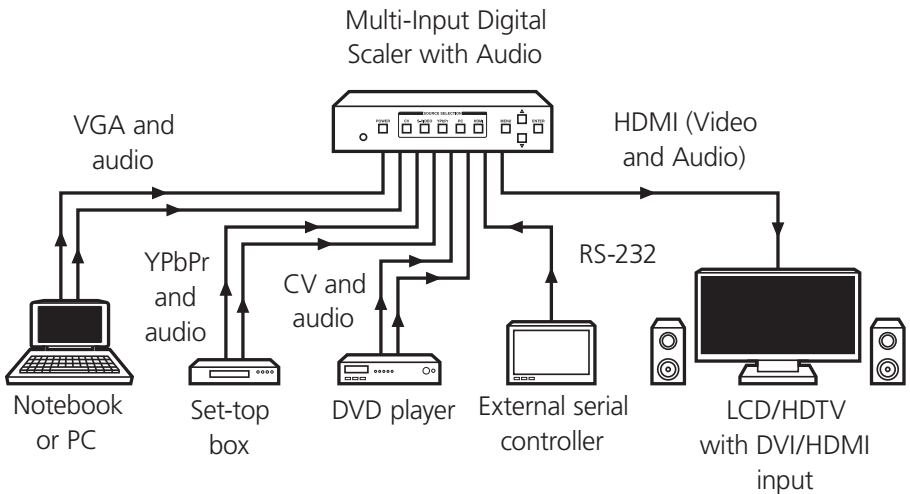


Figure 3-1. Typical application.

#### 3.3 Other Connections

**RS-232:** Connect a serial control device to the DB9 connector labeled RS-232.

**Power:** Use only the 5-VDC, 2.6-A power input (center positive 2.1-mm jack) supplied with the unit.

## 4. Configuration and Operation

### 4.1 Front Panel

Refer to Figure 2-1 and Table 2-1 for the location and description of the components on the scaler's front panel.

### 4.2 OSD Menu for VGA Input Signal

The OSD menu for VGA Input signal's structure is shown in Table 4-1.

Table 4-1. OSD menu for VGA input's structure.

Top Menu	Sub-Menu	Value
PC	CONTRAST	0 to 100%
	BRIGHTNESS	0 to 100%
	H-POSITION	0 to 100%
	V-POSITION	0 to 100%
	CLOCK	0 to 100%
	PHASE	0 to 100%
	SCALE	FULL, OVERSCAN, UNDERSCAN, LETTERBOX, PANSCAN
	MIRROR	OFF or ON
COLOR	COLOR TEMP	NORMAL, USER, COOL, WARM
	Only in USER Mode RED	0 to 100%
Only in USER Mode GREEN	0 to 100%	
Only in USER Mode BLUE	0 to 100%	

Table 4-1 (Continued). OSD menu for VGA input's structure.

Top Menu	Sub-Menu	Value
OUTPUT		NATIVE / VGA / SVGA / XGA / SXGA / UXGA / SXGA+ / WXGA / WSXGA / WUXGA / WXGA+ / 480i / 480p / 576i / 576p / 720p @ 60 Hz  1080i @ 50 Hz  1080i @ 60 Hz  1080p @ 50 Hz  1080p @ 60 Hz
OSD	H-POSITION	0 to 100%
	V-POSITION	0 to 100%
	TIMEOUT	0 to 100%
	BACKGROUND	0 to 8
AUDIO	SOURCE	HDMI / L/R4 / COAXIAL
	DELAY	OFF / 40 ms / 110 ms / 150 ms
	SOUND	ON / MUTE
INFORMATION		SOURCE (Input Interface)  INPUT (Input Resolution)  OUTPUT (Output Resolution)  VERSION (Firmware Version)

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### 4.3 OSD Menu for CV, SV, YPbPr, and HDMI Input Signals

Table 4-2. OSD menu for CV, SV, YPbPr, and HDMI input signals.

Top Menu	Sub-Menu	Value
VIDEO		
	PICTURE MODE	STANDARD, MOVIE, VIVID, USER
Adj only in USER PICTURE MODE	CONTRAST	0 to 100%
Adj only in USER PICTURE MODE	BRIGHTNESS	0 to 100%
Adj only in USER PICTURE MODE	HUE	0 to 100%
Adj only in USER PICTURE MODE	SATURATION	0 to 100%
Adj only in USER PICTURE MODE	SHARPNESS	0 to 100%
	SCALE	FULL, OVERSCAN, UNDERSCAN, LETTERBOX, PANSCAN
	MIRROR	OFF or ON
	NR	OFF or ON
COLOR		
	COLOR TEMP	NORMAL, USER, COOL, WARM
Only in USER Mode	RED	0 to 100%
Only in USER Mode	GREEN	0 to 100%
Only in USER Mode	BLUE	0 to 100%



Table 4-2 (Continued). OSD menu for CV, SV, YPbPr, and HDMI input signals.

Top Menu	Sub-Menu	Value
OUTPUT		NATIVE / VGA / SVGA / XGA / SXGA / UXGA / SXGA+ / WXGA / WSXGA / WUXGA / WXGA+ / 480i / 480p / 576i / 576p / 720p @ 60 Hz  1080i @ 50 Hz  1080i @ 60 Hz  1080p @ 50 Hz  1080p @ 60 Hz
OSD	H-POSITION	0 to 100%
	V-POSITION	0 to 100%
	TIMEOUT	0 to 100%
	BACKGROUND	0 to 8
AUDIO	SOURCE	HDMI / L/Rx / COAXIAL  Where 'x' is 1 for CV, 2 for SV, 3 for YPbPr and 5 for HDMI
	DELAY	OFF / 40 ms / 110 ms / 150 ms
	SOUND	ON / MUTE
INFORMATION		SOURCE (Input Interface)  INPUT (Input Resolution)  OUTPUT (Output Resolution)  VERSION (Firmware Version)

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## 4.4 Infrared Remote Control (IR Remote)

Figure 4-1 illustrates the infrared remote control. Table 4-3 describes its components.

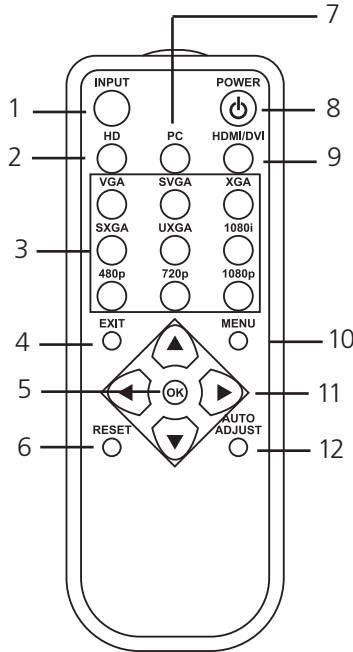


Figure 4-1. Infrared remote control.

Table 4-3. Infrared remote control's functions.

Number	Component	Function
1	Input	Toggle through input sources.
2	HD	Select Component Input.
3	Output Resolution	Select various output resolutions directly. Others are available via the OSD.
4	EXIT	Select to exit OSD menu
5	OK	Select to confirm a selection.
6	RESET	Press and hold for five seconds to reset firmware to factory defaults.

Table 4-3 (Continued). Infrared remote control's functions.

Number	Component	Function
7	PC	Select PC input.
8	Power	Power unit ON/OFF.
9	HDMI/DVI	Select HDMI Input.
10	MENU	Select to show OSD.
11	UP/DOWN/LEFT/ RIGHT	Select to move in OSD menu or to change a selection.
12	AUTO ADJUST	Select to automatically optimize picture centering on the screen.

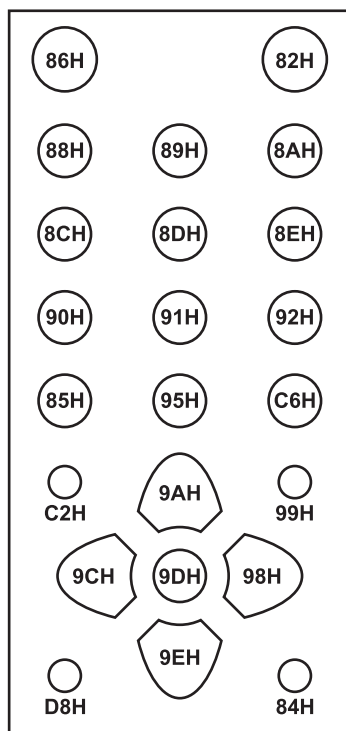


Figure 4-2. Codes on remote show what is actually transmitted via IR when the buttons described in Figure 4-1 and Table 4-3 are used.

### 4.5 Front-Panel Lockout

Under certain circumstances you might want to disable the front-panel controls (for example, to prevent unauthorized or accidental changes to the settings while the unit is in use). To disable the front-panel controls you must use the RS-232 port (see Chapter 5 for details).

You can remove the lockout from the front panel by performing a full factory default reset operation!

To reset to the factory default settings, press the RESET button on the IR remote control for 5-10 seconds. The scaler will turn on when you press the reset button and turn back off when the software reset has completed.

## 5. Serial Control

You can control the video input selection and signal parameter settings for the scaler via an external control system by using the RS-232 port on the unit.

Use a straight-through M/F DB9 serial cable to connect the unit to the PC. Only the TX, RX, and GND pins are used in the connector. The RS-232 port operates at 19200 baud, no parity, and 1 stop bit. In response to a valid command, the scaler will respond with CR, LF, >, SPACE, and then the listed response. You may enter commands as upper-case or lower-case.

With most commands, the scaler will reply immediately, but other commands may take a few seconds to complete. Wait for the full response before you issue more commands to the unit.

Example:

Sending a POWER ON Command ("S POWER 1<CR>") results in the following response from the scaler:

```
SENT
53 20 50 4F 57 45 52 20 31 0D
S P O W E R 1 CR

RECEIVED
0D 0A 3E 20 50 4F 57 45 52 20 4F 4E 0D 0A
CR LF > P O W E R O N CR LF
```

You must power on the unit with either the front-panel push button or by sending the POWER ON Command before the unit will respond as listed. Sending any other commands with the unit powered off will result in the following response from the unit.

Please turn on power (K POWER / S POWER ON).

The commands are described in Sections 5-1 to 5-3.

### 5.1 Read Commands

Table 5-1. Read Commands descriptions.

Command	Response	Description
R POWER	> POWER ON	SHOW POWER STATUS
R SOURCE	> SOURCE CV~HDMI	SHOW SOURCE STATUS
R OUTPUT	> OUTPUT NATIVE~WUXGA	SHOW OUTPUT STATUS

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Table 5-1 (Continued). Read Commands descriptions.

Command	Response	Description
R SIZE	> SIZE FULL or OVERSCAN or UNDERSCAN or LETTERBOX or PANSKAN	SHOW SIZE STATUS
R PICTUREMODE	> PICTUREMODE STANDARD or MOVIE or VIVID or USER	SHOW PICTURE MODE STATUS (default = Standard)
R CONTRAST	> CONTRAST 0~100	SHOW CONTRAST STATUS (default=50)
R BRIGHTNESS	> BRIGHTNESS 0~100	SHOW BRIGHTNESS STATUS(default=53)
R HUE	> HUE 0~100	SHOW HUE STATUS (default=50)
R SATURATION	> SATURATION 0~100	SHOW SATURATION STATUS (default=53)
R SHARPNESS	> SHARPNESS 0~100	SHOW SHARPNESS STATUS (default=48)
R NR	> NR OFF or LOW or MIDDLE or HIGH	SHOW NR STATUS (default=OFF)
R PCHPOSITION	> PCHPOSITION 0~100	SHOW PC H-POSITION STATUS (default=50)
R PCVPOSITION	> PCVPOSITION 0~100	SHOW PC V-POSITION STATUS (default=100)
R PCCLOCK	> PCCLOCK 0~100	SHOW PC COLOK STATUS (default=2)
R PCPHASE	> PCPHASE 0~63	SHOW PC PHASE STATUS (default=61)
R COLORTEMP	> COLORTEMP NORMAL or WARM or COOL or USER	SHOW COLOR TEMP STATUS (default=Normal)
R RED	> RED 0~100	SHOW COLOR TEMP RED STATUS (default=47)

Table 5-1 (Continued). Read Commands descriptions.

Command	Response	Description
R GREEN	> GREEN 0~100	SHOW COLOR TEMP GREEN STATUS (default=47)
R BLUE	> BLUE 0~100	SHOW COLOR TEMP BLUE STATUS (default=47)
R OSDHPOSITION	> OSDHPOSITION 0~100	SHOW OSD H-POSITION STATUS (default=50)
R OSDVPOSITION	> OSDVPOSITION 0~100	SHOW OSD V-POSITION STATUS (default=50)
R OSDTIMEOUT	> OSDTIMEOUT 0~100	SHOW OSD TIMEOUT STATUS (default=10)
R OSDBACKGROUND	> OSDBACKGROUND 0~8	SHOW OSD BACKGROUND STATUS (default=5)
R AUDIOMUTE	> AUDIOMUTE OFF or ON	SHOW AUDIO MUTE STATUS (default=OFF)
R AUDIODELAY	> AUDIODELAY OFF or 1 to 150MS	SHOW AUDIO DELAY STATUS (default=OFF)
R MIRROR	> MIRROR OFF or ON	SHOW MIRRORING STATUS
R KEYLOCK	> KEYLOCK OFF or ON	SHOW FRONT PANEL LOCK STATUS
R RESET	> RESET ON	SHOWS RESET STATUS

An invalid command will respond with "R-[?]"<CR>

## 5.2 Key Commands

Table 5-2. Key Commands descriptions.

Command	Response	Description
K POWER	> POWER	PRESS POWER BUTTON
K MENU	> MENU	PRESS MENU BUTTON
K UP	> UP	PRESS UP BUTTON
K DOWN	> DOWN	PRESS DOWN BUTTON

An invalid command will respond with "K-[?]"<CR>

### 5.3 Set Commands

Table 5-3. Set Commands.

Command	Response	Description
S POWER 0	> POWER OFF	POWER OFF
S POWER 1	> POWER ON	POWER ON
S SOURCE 0	> SOURCE CV	CV INPUT
S SOURCE 1	> SOURCE SV	SV INPUT
S SOURCE 2	> SOURCE COMP	COMP INPUT
S SOURCE 3	> SOURCE PC	PC INPUT
S SOURCE 4	> SOURCE HDMI	HDMI INPUT
S OUTPUT 0	> OUTPUT NATIVE	NATIVE RESOLUTION OUTPUT
S OUTPUT 1	> OUTPUT VGA	VGA RESOLUTION OUTPUT
S OUTPUT 2	> OUTPUT SVGA	SVGA RESOLUTION OUTPUT
S OUTPUT 3	> OUTPUT XGA	XGA RESOLUTION OUTPUT
S OUTPUT 4	> OUTPUT SXGA	SXGA RESOLUTION OUTPUT
S OUTPUT 5	> OUTPUT UXGA	UXGA RESOLUTION OUTPUT
S OUTPUT 6	> OUTPUT 480I	480I RESOLUTION OUTPUT
S OUTPUT 7	> OUTPUT 480P	480P RESOLUTION OUTPUT
S OUTPUT 8	> OUTPUT 720P	720P 60HZ RESOLUTION OUTPUT
S OUTPUT 9	> OUTPUT 1080I	1080I 60HZ RESOLUTION OUTPUT
S OUTPUT 10	> OUTPUT 1080P	1080P 60HZ RESOLUTION OUTPUT
S OUTPUT 11	> OUTPUT 576I	576I 60HZ RESOLUTION OUTPUT
S OUTPUT 12	> OUTPUT 576P	576P 60HZ RESOLUTION OUTPUT
S OUTPUT 13	> OUTPUT 720P	720P 50HZ RESOLUTION OUTPUT



Table 5-3 (Continued). Set Commands.

Command	Response	Description
S OUTPUT 14	> OUTPUT 1080I50	1080I 50HZ RESOLUTION OUTPUT
S OUTPUT 15	> OUTPUT 1080P50	1080P 50HZ RESOLUTION OUTPUT
S OUTPUT 16	> OUTPUT WXGA	WXGA RESOLUTION OUTPUT
S OUTPUT 17	> OUTPUT WSXGA	WSXGA RESOLUTION OUTPUT
S OUTPUT 18	> OUTPUT WUXGA	WUXGA RESOLUTION OUTPUT
S OUTPUT 19	> OUTPUT WXGA+	WXGA+ RESOLUTION OUTPUT
S OUTPUT 20	> OUTPUT SXGA+	SXGA+ RESOLUTION OUTPUT
S SIZE 0	> SIZE FULL	SCALER FULL OUTPUT
S SIZE 1	> SIZE OVERSCAN	SCALER OVERSCAN OUTPUT
S SIZE 2	> SIZE UNDERSCAN	SCALER UNDERSCAN OUTPUT
S SIZE 3	> SIZE LETTERBOX	SCALER LETTERBOX OUTPUT
S SIZE 4	> SIZE PANSCAN	SCALER PANSCAN OUTPUT
S PICTUREMODE 0-3	> PICTUREMODE STANDARD USER	0:STANDARD; 1:MOVIE; 2:VIVID; 3:USER, PICTURE MODE OUTPUT
S CONTRAST 0-100	> CONTRAST 0-100	CONTRAST 0-100 ADJUST (default=50)
S BRIGHTNESS 0-100	> BRIGHTNESS 0-100	BRIGHTNESS 0-100 ADJUST (default=53)
S HUE 0-100	> HUE 0-100	HUE 0-100 ADJUST (default=50)
S SATURATION 0-100	> SATURATION 0-100	SATURATION 0-100 ADJUST (default=53)

## Multi-Input Digital Scaler with Audio

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Table 5-3 (Continued). Set Commands.

Command	Response	Description
S SHARPNESS 0-100	> SHARPNESS 0-100	SHARPNESS 0~100 ADJUST (default=48)
S NR 0-3	> NR OFF-HIGH	0:OFF; 1:LOW; 2:MIDDLE; 3:HIGH, NR CONTROL (default=Off)
S PCHPOSITION 0-100	> PCHPOSITION 0-100	H POSITION 0~100 ADJUST (default=50)
S PCVPOSITION 0-100	> PCVPOSITION 0-100	V POSITION 0~100 ADJUST (default=100)
S PCCLOCK 0-100	> PCCLOCK 0-100	PC MODE CLOCK 0~100 ADJUST (default=2)
S PCPHASE 0-63	> PCPHASE 0-63	PC MODE PHASE 0~63 ADJUST (default=61)
S COLORTEMP 0-3	> COLORTEMP NORMAL~USER	0:NORMAL; 1:WARM; 2:COOL; 3:USER, COLOR TEMP SETTING (default=NORMAL)
S RED 0-100	> RED 0-100	COLOR TEMP "RED" ADJUST (default=47)
S GREEN 0-100	> GREEN 0-100	COLOR TEMP "GREEN" ADJUST {default=47}
S BLUE 0-100	> BLUE 0-100	COLOR TEMP "BLUE" ADJUST (default=47)
S OSDHPOSITION 0-100	>OSD H POSITION 0-100	OSD H POSITION 0-100 ADJUST (default=50)
S OSD VPOSITION 0-100	> OSDVPOSITION 0-100	OSD V POSITION 0-100 ADJUST (default=50)
S OSDTIMEOUT 0-100	> OSDTIMEOUT 0-100	OSD TIMEOUT 0-100 SETTING (default=10) SECONDS

Table 5-3 (Continued). Set Commands.

Command	Response	Description
S OSDBACKGROUND 0-8	> OSDBACKGROUND 0-8	OSD OSDBACKGROUND 0-8 ADJUST (default=5) 0 = Darkest Background; 8 = Transparent Background
S AUDIOMUTE 0-1	> AUDIOMUTE OFF-ON	0:OFF; 1:ON, AUDIO MUTE CONTROL (default=Off)
S AUDIODELAY 0-1	> AUDIODELAY OFF-ON	0:OFF; 1:ON, AUDIO DELAY CONTROL (default=Off)
S MIRROR 0~1	> MIRROR OFF-ON	0:OFF;1:ON, MIRRORING (default=Off)
S KEYLOCK 0~1	> KEYLOCK OFF-ON	0:OFF;1:ON, FRONT PANEL LOCK (default=Off)
S RESET 0~1	> RESET ON	0:OFF;1:ON, RESET to DEFAULTS (default=Off)

An invalid command will respond with "S-[?]-[xx]"<CR>

### 6. Troubleshooting

We recommend that you assemble, configure, and test all products before the final installation to eliminate the possibility of problems on-site.

#### 6.1 Resetting the Scaler to Factory Defaults

There are no field-serviceable parts or circuits in the device. If you think that the device is malfunctioning, first try to reset to the factory-default settings (using the RESET button on the IR remote control), and set the output either to XGA (press MENU+up arrow) or 480p (press MENU+down arrow) to obtain an image on your LCD.

#### 6.2 Calling Black Box

If you determine that your scaler is malfunctioning, do not attempt to repair the unit. There are no user-serviceable parts inside the unit. Opening the unit will void the warranty.

Contact Black Box Technical Support at 724-746-5500 to obtain an RMA (Return Authorization) number.

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.

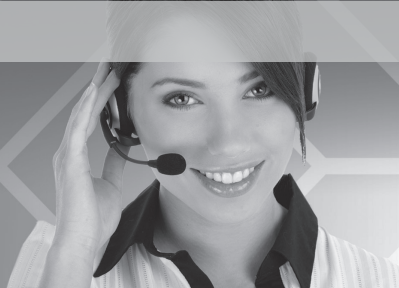
#### 6.3 Shipping and Packaging

If you need to transport or ship your device:

- Package it carefully. We recommend that you use the original container if possible.

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

Tech support the  
way it should be.



Great tech support is just 20 seconds away at  
724-746-5500 or [blackbox.com](http://blackbox.com).



#### About Black Box

Black Box Network Services is your source for more than 118,000 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 20 seconds or less.

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