Video Scaler Pro with RS-232
# - ID# 783

Operation Manual

Introduction

The Video Scaler Pro with RS-232 is designed to convert Composite S-Video and YCbCr signals to a variety of computer and HDTV resolutions. It handles video input from all TV systems NTSC, PAL and SECAM TV standards. The Video Scaler Pro with RS-232 has many great features to enhance performance and is ideal for use in professional large screen presentation studio.

Features

1. Video inputs are de-interlaced and scaled up to output resolution as below
> *** PC output :** 640x 480, 800x 600 (SVGA), 1024 x768 (XGA), 1280 x 1024(SXGA),
> 1280 x 768(WXGA), 1365 x 768
> *** HDTV output:** 852 x 480 P, 852 x 576P
> 1280 x 720 P 16:9
> 1920 x 1080i 16:9

2. Automatically accommodates worldwide input video systems of NTSC 3.58, NTSC 4.43, PAL, PAL M, PAL N, and SECAM.

3. High performance adaptive 4H Comb filter Y/C separator with adjustable vertical peaking.

4. Per-pixel motion compensated de-interlacing algorithms to produce artifact-free progressive scan video signal.

5. Built in Adaptive film mode 3:2 pull-down provides clear and crisp de-interlacing of video originating from 24 fps film,such as DVD movies.

6. Frame rate up conversion from 50 up to 75Hz (PAL), or 60 up to 85Hz(NTSC)

7. Vertical temporal filter(VT) removes jaggy and other de-interlacing artifacts from normal video.

8. OSD menu with adjustable control on Color,Sharpness,Brightness,Contrast and Tint(NTSC).

9. Built-in DCTI/DLTI circuit for color/luminance transient improvement.

10. The PC loop-through allows for easy change between video and PC source.

11. Last memory for all adjustments.

12. RS-232 interface allows remote control from PC.

Connecting the hardware

The first step is to connect a video source to the input of the Video Scaler and to connect its output to a display device. Below is a photo of the CSC-1600HD rear panel.
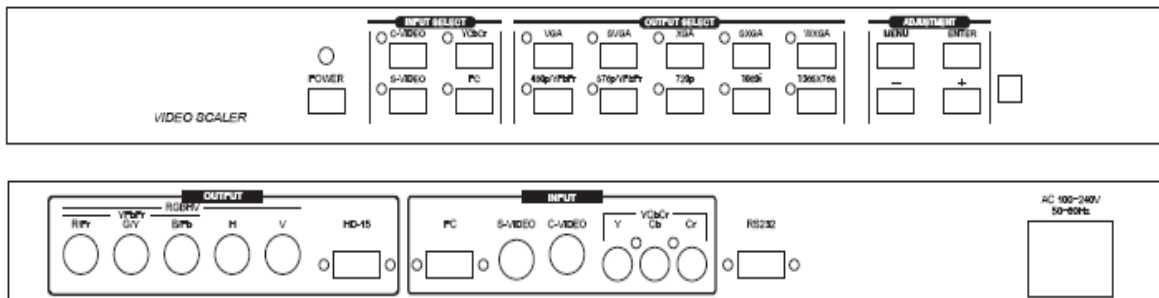
Rack Mounting
The Video Scaler Pro with RS-232 unit can be mountable in a standard 19" (1 RU) EIA rack assembly. Desktop versions can be converted to rackmount versions by changing the unit's front panel.

Connecting the Video Inputs
The Video Scaler can accept a Composite Video, an S-Video or an YCbCr input
signal for scaling, as well as a computer signal input that is passed through the unit
when the PC In (Bypass) is selected.
* **Composite Video**- use a Composite Video cable to connect the composite
Video output of the source equipment to the connector labeled " C-Video"
on the back of the Video Scaler.

* **S-Video** - use a S-Video cable to connect the S-Video output of the source
video equipment to the connector labeled " S-Video" on the back of the Video
Scaler. S-Video provides improved performance over Composite Video and is
recommended over composite.

* **YCbCr Input** - use a 3 rca-to- 3 rca YCbCr cable to connect the YCbCr output
of the source video equipment to the connectors labeled YCbCr on the back of
the video scaler. Please note the plugs' color haue to match with the color of the
RCA Jacks. YCbCr composite provides the best picture quality among all three
inputs, and should be used whenever possible.

* **Computer RGB with H&V Sync**- Connect the source computer's VGA output
signal to the HD 15 connector labeled " PC In" on the back of the Video Scaler.
Note - This Computer input Signal is not scaled, but is available for pass-through
when the Video Scaler is in the PC In (Bypass) Mode.

**Connecting the scaled output to your projector, HDTV, PC monitor or LCD
Display-**
The Video Scaler Pro with RS-232 has two sets of output connectors for you to choose
from the HD-15 D-sub and the RGBHV BNC jacks. Only one of the two output terminals
has signal running on it at one time.
When one output terminal is selected the other terminal will have no output signal.
You can use the two buttons (HD-15 and BNC) on the remote control to choose your
desired output or you could go to the "Output terminal" tool bar under the ON Screen
Menu to choose the terminal you want.
The 5 BNC jacks are shared by RGBHV output and YPbPr output.
When 480P or 576P output resolution is selected the three BNC jacks from the most left
to the center will carry Pr,Y and Pb correspondingly. In this case only three plugs are
needed to connect the YPrPb output to the destination TV/Monitor.
For output mode other then 480P or 576P the BNC jacks from left to right,will carry
RGBHV signal respectively. In such a care, all BNC plugs of the 5 BNCs cable are
needed to connect RGBHV output to the destination TV/Monitor.

Connecting the AC power
The Video Scaler Pro with RS-232 accepts AC input voltage range from 100~240V
(50~60HZ).
The unit has a switching power supply installed inside that will convert the
AC input to 12V DC 1A.
* Power ON/OFF switch-Once the AC power is feed into the unit, the unit
enter into standby mode, where a limited current is provided to the
micro processor to allow the remote control to work. Press the power on
switch will turn the unit on to the normal operation status.

Controlling the video scaler

The video Scaler is controlled via Front Panel Push Buttons or remote control and its status is indicated by Front Panel LED's, and OSD Display. The following photograph shows the Front Panel Control Buttons and LED Indicators.

Input Selection

Pressing one of the four input Buttons allows manual selection of the corresponding Video Input signal.

* **C-Video button and LED** - The LED illuminates when the composite Video input has been selected.

* **S-Video button and LED** - The LED illuminates when the S-Video input has been selected.

* **YCbCr button and LED** - The LED illuminates when the component. YCbCr (or YUV) input has been selected.

* **PC button and LED** - The LED illuminates when the PC bypass mode has been selected.

Output Selection

The Video Scaler Pro with RS-232 has ten output selection buttons allow you to directly select the desired output resolution. Some output resolution mode may cover more than one horizontal /vertical scanning frequency.

This scan rate information will be displayed on the screen when an output selection button is pressed.

To alter the scanning rate under a certain output resolution please refer to "OSD menu operation" selection.

* **VGA button and LED** -This LED illuminates when the 640 x 480 has been selected by pressing the button.

* **SVGA button and LED** - This illuminates when 800 x 600 output has been selected by pressing the button.

* **XGA button and LED** - This illuminates when 1024 x 768 output has been selected by pressing the button.

* **SXGA button and LED** - This illuminates when 1280 x 1024 output has been selected by pressing the button.

* **WXGA button and LED** - This illuminates when 1280 x 768 has been selected by pressing the button.

* **480p/YPbPr button and LED** - This illuminates when 480p (852 x 480p) has been selected by pressing the button.
while in this mode, only Pr/Y/Pb Connectors
(BNC) are required for connecting the output to
the displaying TV/Monitor.

* **576p/YPbPr button and LED** - This illuminates when 576p (852 x 576p) has been

selected by pressing the button. While in this mode,
only Pr/Y/Pb connectors (BNC) are required for
connecting the output to the displaying TV/Monitor.
* **720p button and LED** - This illuminates when the HDTV quality 720P (1280 x 720)
output is selected by pressing the button.
The aspect ratio of the output picture will be converted
to 16:9 from original 4:3 on the video input.
* **1080i button and LED** - This illuminates when the interlaced HDTV 1080i
The aspect ratio of the output picture will be converted
to 16:9 from original 4:3 on the video input.
* **1365 x 768 button and LED** - This illuminates when the 1365 x 768 output is
selected by pressing the button.

Picture Adjustment
The picture adjustments along with other controls of the scaler can be achieved by
using OSD menu control.

**OSD Menu
Operation**

The **MENU**, **+** , **-** and **enter** buttons are used in the on screen menu control
operation.
MENU - This button serves two purposes-
①   to show drop-down menu of main menu page and
②   to act as " exit " when an adjustment is complete. Press this
button while on main menu page will exit the menu operation.
ENTER - Press the button to confirm your selection of the parameter you
want to adjust.
+ -   Press the button to move the highlight bar upwardly from one
parameter to another. Or when an adjustment parameter is
selected press the button to increase the setting value.
- -   Press the button to move the highlight bar downwardly from one
parameter to another. When an adjustment parameter is selected
press the button to decrease the setting value.
Note: When a menu or sub-menu parameter is selected, but if there is no
activity for about seven seconds, the unit automatically revert to normal
mode and the OSD disappear.
Main Menu- Press the menu button will enter into main menu page shown
as follows:-

> **Video Adjust**
> **Vertical Freq Adjust**
> **OSD display**
> **Output Terminal**
> **IR sensor**
> **Front Panel Lockout**

Use + , - button to choose the parameter you want to adjust.
When a parameter is selected it is highlighted in red color.
Press **ENTER** button to enter into the selected adjustment page.

Video Adjust- When video adjust page is selected, it will show picture parameters as below:

> **Brightness**
> **Contrast**
> **Color**
> **Sharpness**
> **Tint**
> **Reset**

Use + , - button to choose the parameter you wish to adjust and then press enter to get down to value adjust sub-menu.

Use +/- to increase/ decrease the value. use menu to exit afterward.

The adjustment range for each parameter are as follows :

> **Brightness 0~255**
> **Contrast 0~63**
> **Color 0~127**
> **Tint -30~+30**

Press reset to return all value back to factory preset position which is the middle value of each adjust range.

Vertical frequency rate adjust- When it is selected it allows you to choose different vertical frequency while under VGA, SVGA or XGA modes.

The higher the vertical refresh rate the less flicker the picture will be. When the vertical refresh rate of an output mode is changed, so will its horizontal scanning rate. Please refer to specification page-for cross relationship between vertical and horizontal scanning rate.

OSD display- It allows you to enable or disable the OSD display of the output information appeared on the upper left corner of the screen.

Output Terminal - This allows you to choose which one of the two output terminals, HD-15 or BNC, will have the output signal.

When one is selected the other won't have signal.

IR Sensor- This allows you to enable or disable the IR sensor for the Remote control.

When it is disabled the command issued from the remote control can not be received by the main unit.

Front Panel Lockout- Under certain circumstances it may be desirable to disable the Front Panel Controls. For example, to prevent unauthorized or accidental changes to the setting while the unit is in use. To disable the Front Panel Controls.

press MENU, choose the Front Panel Lockout section and press ENTER.

Then you may choose Front Panel Controls OFF. In the OFF position, the unit will not respond to commands from the Front Panel.

To return to normal operation, press and hold simultaneously the + and - buttons for 3 seconds or use the IR Remote Control to gain access to the Menu or use the RS-232 commands.

Remote Control

1. Power: Power ON/OFF button.

2. Display: Press the button to enable or disable the ON Screen Display of the input/output information.

3. C-Video: Press the button to select composite video as input source.

4. S-Video: Press the button to select S-Video as input source.

5. YCbCr: Press the button to select YCbCr as input source.

6. PC: Press the button to select PC input looping through to the output.

7. VGA: Press the button to slect 640 x 480 as output resolution.

8. SVGA: Press the button to select 800 x 600 as output resolution.

9. XGA: Press the button to select 1024 x 768 as output resolution.

10. SXGA: Press the button to select 1280 x 1024 as output resolution.

11. WXGA: Press the button to select 1280 x 768 as output resolution.

12. 480p: Press the button to select 852 x 480p as output resolution.

13. 576p: Press the button to select 852 x 576p as output resolution.

14. 720p: Press the button to select 1280 x 702p as output resolution.

15. 1080i: Press the button to select 1920 x 1080i (interlaced) as output resolution.

16. 1365 x 768: Press the button to select 1365 x 768 as output resolution.

**17. HD-15:** Press the button to select 15 pin D-sub connector as output terminal.

18. BNC: Press the button to select RGBHV BNC connector as output terminal.

19. Menu: Press the button to enter into main menu page or to exit from a sub-menu.

20. Enter : Press the button to confirm your selection of an adjustment parameter.

21. ▲ ▼ : Press the ▲ or ▼ to move up or move down the hight-light bar to a desired parameter.

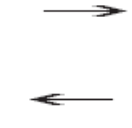**22. ◄► :** Press the button to increase or decrease the value of the selected parameter.
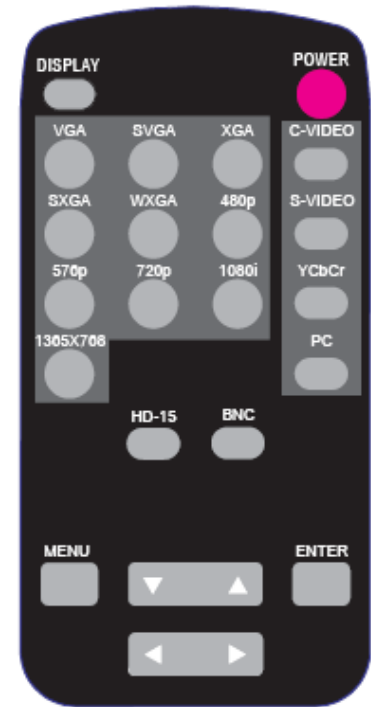
RS-232 Control of the Video Scaler
The Video Input selection and signal parameter setting for the The Video Scaler Pro can also be controlled via an external control system by using the RS-232 port on the unit. If information for this control method is required,beyond the scope of the instructions provided in this section, please contact Cypress Technology Support, A disk is provided with The Video Scaler Pro containing a sample Windows Control Panel that permits remote control of the unit from a PC via RS-232.
Note- The connection between The Video Scaler Pro unit and the RS-232 remote controller is made with a modem cable.
* The Connection between video scaler and remote controller with RS-232 modem cable.

Video Scaler			Remote Controller	
PIN	Definition		PIN	Definition
1	NC		1	NC
2	T xD		2	R xD
3	R x D		3	T x D
4	NC		4	NC
5	GND		5	GND
6	NC		6	NC
7	NC		7	NC
8	NC		8	NC
9	NC		9	NC

* RS-232 transmission format:
Baud Rate : 9600 bps
Data Bit : 8 Bits
Parity: None
Stop Bit: 1 bit

RS-232 Control of the Video Scaler
* Command / Response codes of RS-232 transmission:
the Command/ response codes are the combination of 3 bytes. the 1st,
2nd byte are text and the 3rd byte is value.

Remote Controller Command Codes:

Code	Comment	
'PW' + 0	POWER	power off (standby)
'PW' + 1		power on (normal)
'IN' + 0	INPUT	Composite video
'IN' + 1		S-Video
'IN' + 2		YCbCr
'IN' + 3		PC Bypass
'JA' + 0	JACK	HD-15 (D-Sub)
'JA' + 1		BNC
'OU' + 0	OUTPUT	VGA
'OU' + 1		480p
'OU' + 2		SVGA
'OU' + 3		XGA
'OU' + 4		SXGA
'OU' + 5		576p
'OU' + 6		720p
'OU' + 7		1080i
'OU' + 8		WXGA
'OU' + 9		1365 X 768
'DI' + 0	DISPLAY	OSD display OFF
'DI' +1		OSD display ON

'BR'+ value		Brightness value= 0~255
'CO' + value		Contrast value= 0~63
'SA' + value		Saturation value= 0~127
'SH' + value		Sharpness value= 0~14
'TI' + value		Tint value= -30~+30
'RE' + 0		reset video adjustment reset
'ZV' + value		VGA vert freq value = 0:60hz 1:72hz 2:75:hz 3:85hz
'ZS' + value		SVGA vert freq value = 0:60hz 1:72hz 2:75hz 3:85hz
'ZX' + value		XGA vert freq value = 0:60hz 1:70hz 2:75hz
'IR' + 0	IR	IR sensor OFF
'IR' + 1		IR sensor ON
'FP' + 0	PANEL	front panel lockout ON
'FP' + 1		front panel lockout OFF
'AL' + 0		retrive video scaler all status 'PW'+? 'IN' +? 'JA'+? 'OU'+? 'DI' +? 'IR'+? 'FP' +? 'BR'+? 'CO' +? 'SA'+? 'SH'+? 'TI' +? 'ZV'+? 'ZS' +? 'ZX'+?

RS-232 Control of the CSC-1600HD Video Scaler
* Command / Response codes of RS-232 transmission:
the Command/ response codes are the combination of 3 bytes. the 1st,
2nd byte are text and the 3rd byte is value.

Code		Comment
'PW' + 0	POWER	power off (standbt)
'PW' + 1		power on (normal)
'IN' + 0		Composite video
'IN' + 1	INPUT	S-Video
'IN' + 2		YCbCr
'IN' + 3		PC Bypass
'A' + 0	JACK	HD-15 (D-Sub)
'JA' + 1		BNC
'OU' + 0		VGA
'OU' + 1		480p
'OU' + 2		SVGA
'OU' + 3		XGA
'OU' + 4		SXGA
'OU' + 5	OUTPUT	576p
'OU' + 6		720p
'OU' + 7		1080i
'OU' + 8		WXGA
'OU' + 9		1365 X 768
'DI' + 0	DISPLAY	OSD display OFF
'DI' +1		OSD display ON
'BR' + value		Brightness value= 0~255
'CO' + value		Contrast value= 0~63
'SA' + value		Saturation value= 0~127
'SH' + value		Sharpness value= 0~14
'TI' + value		Tint value= -30~+30
'RE' + 0		reset video adjustment reset
'ZV' + value		VGA vert fre value = 0:60hz 1:72hz 2:75:hz 3:85hz
'ZS' + value		SVGA vert fre value = 0:60hz 1:72hz 2:75hz 3:85hz
'ZX' + value		XGA vert fre value = 0:60hz 1:70hz 2:75hz
'IR' + 0	IR	IR sensor OFF
'IR' + 1		IR sensor ON
FP' + 0	PANEL	front panel lockout ON
'FP' + 1		front panel lockout OFF
'OK' + 0		Video scaler power plugs in ready

Specifications

Computer input (Loop thru)	RGB with HV Sync			
Max Computer Input Resolution	1600 x 1200			
Computer Input Connector Type	HD 15 Female			
Computer Input signal Level	RGB @ 0.7V, H&V Sync @ TTL			
Video Inputs	Composite Video @ 1 Vp-p 75 ohm S-Video @ 1 Vp-p 75 ohm YCbCr Y : 1 Vpp 75 ohm CbCr : 0.7 Vp-p 75 ohm			
Video Standard	NTSC 3.58, NTSC 4.43, PAL B/D/G/I PAL-N, PAL-M, SECAM			
Video Input connectors	Composite Video on BNC S-Video on 4-pin Mini-DIN Component or RCA Jacks			

Scaled Output Resolutions

		Pixels	Format	Scan
PC Resolution	VGA	640 x 480	RGBHV	Progressive
	SVGA	800 x 600	RGBHV	Progressive
	XGA	1024 x 768	RGBHV	Progressive
	SXGA	1280 x 1024	RGBHV	Progressive
	WXGA	1280 x 768	RGBHV	Progressive
		1365 x 768	RGBHV	Progressive
HDTV Resolution	16:9	RGBHV 1280 x 720p (720p)	RGBHV	Progressive
	16:9	RGBHV 1920 x 1080i (1080i)	RGBHV	Interlaced
		YPbPr (852 x 480p)	YPbPr	Progressive
		YPbPr (852 x 576p)	YPbPr	Progressive

Scaled Output vertical refresh rates & Horizontal scan rates

Output resolution	vert. (Hz)	hori. (Hz)
VGA	59.526	31.250
	72.812	37.861
	75.003	37.501
	85.013	43.270
SVGA	60.320	37.880
	72.191	48.078
	75.003	46.875
	85.037	53.657
XGA	60.000	48.360
	70.027	56.476
	75.041	60.032
SXGA	60.020	63.981
WXGA	60.006	48.364
480p	59.940	31.470
576p	60.190	37.620
720P	59.800	44.850
1080i	59.800	33.640
1365 X 768	60.011	48.368

Manual Control	Front Panel Buttons
RS-232 Control	Via Rear Panel DB9F Connector
IR Remote control	Yes
Video Adjustments	Brightness, Contrast, Color Saturation, Tint (NTSC), Sharpness
Weight	2.25 Kgs
Dimensions	444(D)x 175 (W) x 50(H)mm
Power Source	100~240VAC to DC 12V/1A Desktop Switching Adaptor