

# USER MANUAL

## SC61D

PTN Mini Scaler Switcher



Version: SC61D2013V1.2

**NOTICE:** Please read this user manual carefully before using this product.

This manual is only an instruction for operators, not for any maintenance usage. The functions described in this version are updated till May 2013. Any changes of functions and parameters since then will be informed separately. Please refer to the dealers for the latest details.

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**All product function is valid till 2013-05-27.**

### Update History

Version	Date	Update Content
1.0	2011.10.05	First version.
1.1	2012-11-23	Add output adjustment function and OSD introduction.
1.2	2013.05.27	Modified the system diagram.

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## 1. Introduction

### 1.1. Introduction to SC61D

**SC61D** is a full HD scaler switcher with 6 video & 3 audio inputs, it scales & switches any video signal HDMI, VGA, YPbPr, C-Video & S-video to HDMI up to 1080P.

It's controllable via the button, IR and RS232. It's a high performance for education institution, meeting room, conference room, demonstration hall etc.

### 1.2. Package Contents

- 1 x SC61D
- 1 x Power Adapter (DC 12V)
- 1 x IR remote (Cell battery is not included)
- 1 x Captive screw connector
- 1 x RS232 cable
- 1 x User Manual

**Notes:** Please confirm if the product and the accessories are all included, if not, please contact with the dealers.

## 2. Features

- 6 video Inputs: 2 x HDMI, 1 x VGA, 1 x YPbPr, 1 x C-video & 1 x S-video.
- Upscale to HDMI output at 1080P.
- 3 audio outputs: HDMI embedded audio, 3.5mm stereo audio and Coaxial (SPDIF).
- Output resolutions selectable to assure preferred output.
- Output display H/V size: adjustable to settle any overscale problem.
- Output display H/V position moveable.
- Picture/MP3 display via USB.
- Video parameter setting and preset.
- Powerful OSD function with full control, support output freeze function
- Ultra-switching for instaneous display.
- HDMI1.3 and HDCP compatible.
- Firmware updatable via USB.
- Front panel lockout.
- Controllable via button, IR & RS232.

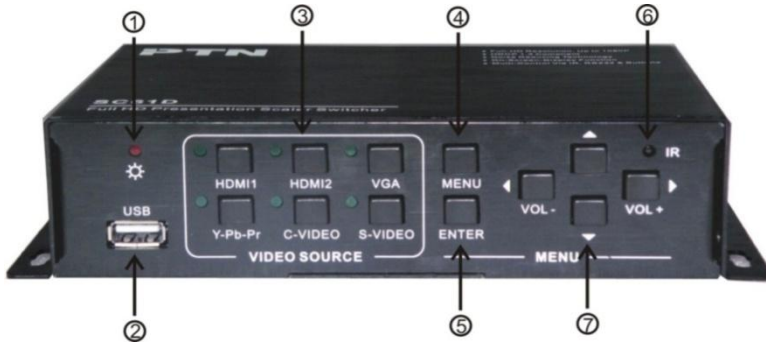
### 3. Specification

Video Input		Video Output	
Input	2 HDMI, 1 VGA, 1 YPbPr 1 C-Video1 S-Video 1 USB multimedia input	Output	1 HDMI
Input Connector	Female HDMI Female VGA(15 pin HD) Female RCA 4 pin mini DIN connector USB-A connector	Output Connector	HDMI female connector
Video Signal	HDMI 1.3/DVI, VGA, RGBHV, RGBs, RGsB, RsBsGs, NTSC 3.58, NTSC 4.42, PAL, SECAM MPEG / AVI / JPG for USB input	Video Signal	HDMI
Video General			
Resolution Range	1080P,1920*1080 ; 720P, 1280*720; WXGA,1280*800 ; XGA, 1024*768.	Bandwidth	HDMI:4.95Gbps(1.65Gbps per color) C-Video/S-Video:150MHz YPbPr: 170MHz VGA: 375MHz
Maximum Pixel Clock	145MHz	Video Impedance	75Ω
VGA Cross Talk	-50dB@5MHz	Input / Output Level	0.5V~2.0Vp-p
Gain	0dB	HDCP	Compliant with DVI & HDMI 1.3 standards

Audio Input		Audio output	
Input	3 Stereo Audio 2 digital embedded audio	Output	stereo audio COAX and HDMI audio
Input Connector	RCA for for YPbPr, C-Video & S-Video audio 3.5mm jack for VGA audio HDMI for embedded audio	Output Connector	3.5mm jack for line audio RCA for CO-AX audio (SPDIF) HDMI for embedded audio
Input Impedance	>10kΩ	Output Impedance	50Ω
Audio General			
Frequency Response	20Hz~20K Hz	Stereo Channel Separation	>80dB @1KHz
CMRR	>90dB @20Hz to 20K Hz		
Control Parts			
Control/Remote	IR remote, Buttons & RS-232	Options	TCP/IP control by PTNET
General			
Temperature	-20 ~ +70°C	Humidity	10% ~ 90%
Power Supply	DC12V adapter	Power Consumption	7W
Case Dimension	W160 x H44x D100mm (wall mountable )	Product Weight	0.4Kg

## 4. Operations of the Control Panel and the Remote Controller

### 4.1. Operations of the Control Panel



- ① Power indicator. It will keep on red when the unit is connected with power.
- ② USB input. It can work as the USB flash disk, supporting the JPEG picture presentation playing, and MP3 audio playing. It is operated by the OSD. It can work as the firmware updating port, which is working with the computer, connection USB cable.
- ③ Video source selection buttons. You can select the video/audio source by these six buttons.
- ④ The MENU button to active OSD (on-screen display), working with the direction key. When press, will enter into the Picture setting, Audio setting, System setting and USD setting mode. The MENU button also can cancel the last operation.
- ⑤ The ENTER button, working with the MENU button and the direction key. When press, can confirm the setting parameter. When into the USB mode, the ENTER button also has the confirm function.
- ⑥ IR sensor. It is for IR remote controlling, receiving the signal of IR remote.
- ⑦ The direction key, when enter into the OSD mode, the four buttons will able. When OSD is off, only the left button and the right button can be able for the volume controlling (VOL-, VOL+).

## 4.2. Operations of the Remote Controller

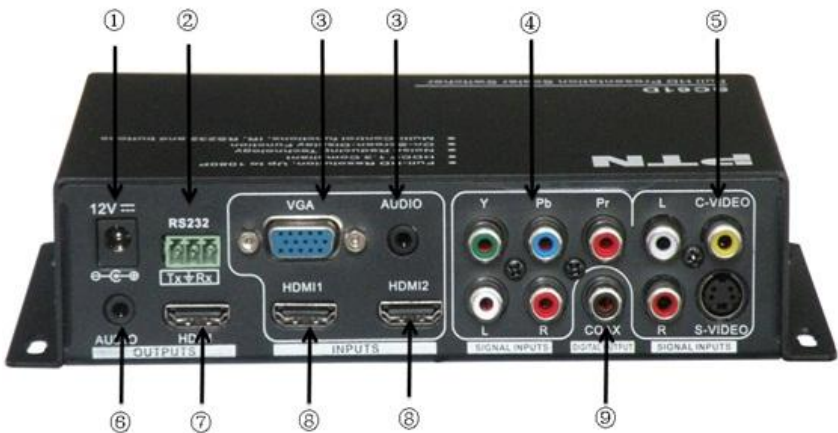
**Callout 1:** Select the video source, audio following switching

**Callout 2:** Status setting for audio/video

**Callout 3:** OSD operation and volume control

**Callout 4:** Select the output resolution

## 5. Interfaces Connection Introduction





- ① Power port. Connecting the 12VDC power.
- ② RS232 control port, works with the third-party controller, for bi-directional RS232 commands.
- ③ VGA and stereo audio input. It supports the different resolutions and format.
- ④ YPbPr and stereo audio input.
- ⑤ S-Video/C-Video and stereo audio input. They share the same stereo audio.
- ⑥ Stereo audio output. All the input audio will be switched to this output, including the embedded HDMI audio.
- ⑦ HDMI output. Embedded digital audio, with volume adjustable.
- ⑧ HDMI inputs. Supports HDCP1.3.
- ⑨ Coaxial audio output, with SPDIF format.

## 5.1. Video Input/output

SC61D supports different kinds of video signal, such as C-Video, S-Video, YPbPr, VGA and HDMI. And all can be scaled to high-resolution HDMI format and switched out.

### 5.1.1. C-Video and S-Video input

- Supporting PAL/SECAM/NTSC format
- Changeable aspect ratio. (Full-screen, wide screen, 4:3)
- Color RGB adjustable

### 5.1.2. YPbPr input

Changeable aspect ratio. (Full-screen, wide screen, 4:3)

Input Resolution	Display Parameter				
	Frame frequency		Frame frequency		Frame frequency
720x480 I	2:1	525	15.75	60	4:3
720x480 P	1:1	525	31.5	60	4:3
720x576 I	2:1	625	15.625	50	4:3
720x576 P	1:1	625	31.25	50	4:3
1280x720P	1:1	750	45	60	16:9
1280x720P	1:1	750	37.50	50	16:9
1920x1080 I	2:1	1125	28.125	50	16:9

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1920x1080 l	2:1	1125	33.75	60	16:9
1920x1080 l	2:1	1250	31.25	50	16:9
1920x1080 p	1:1	1250	62.5	50	16:9
1920x1080 p	1:1	1250	67.5	60	16:9
The bandwidth is up to 170MHz					

#### 5.1.3. VGA input

The VGA resolution is VESA standard, supporting:

No.	Resolution	No.	Resolution	No.	Resolution
1	640x480@60 Hz	6	800x600@75 Hz	11	1280x768
2	640x480@72 Hz	7	1024x768@60 Hz	12	1360x768@60 Hz
3	720x400@70 Hz	8	1024x768@70 Hz	13	1920x1080
4	800x600@60 Hz	9	1024x768@75 Hz		
5	800x600@72 Hz	10	1280x1024@75 Hz		

- The bandwidth is up to 375MHz (-3dB).
- The following audio can adjust bass/treble
- Changeable aspect ratio. (Full-screen, 4:3)

#### 5.1.4. HDMI input

HDMI resolution support:

No.	Resolution	No.	Resolution	No.	Resolution
1	640x480@60Hz	6	800x600@72 Hz	11	1280x1024@75Hz
2	640x480@72Hz	7	800x600@75Hz	12	1360x768
3	640x480@75Hz	8	1024x768@60 Hz	13	1920x540
4	800x600@56Hz	9	1024x768@70 Hz	14	1920x1080l
5	800x600@60 Hz	10	1024x768@75 Hz	15	1920x1080P

- Digital embedded audio decoding.
- Changeable aspect ratio (Full-screen, wide screen, 4:3, auto-adjust).
- Support HDCP1.3, compatible with DVI signal.

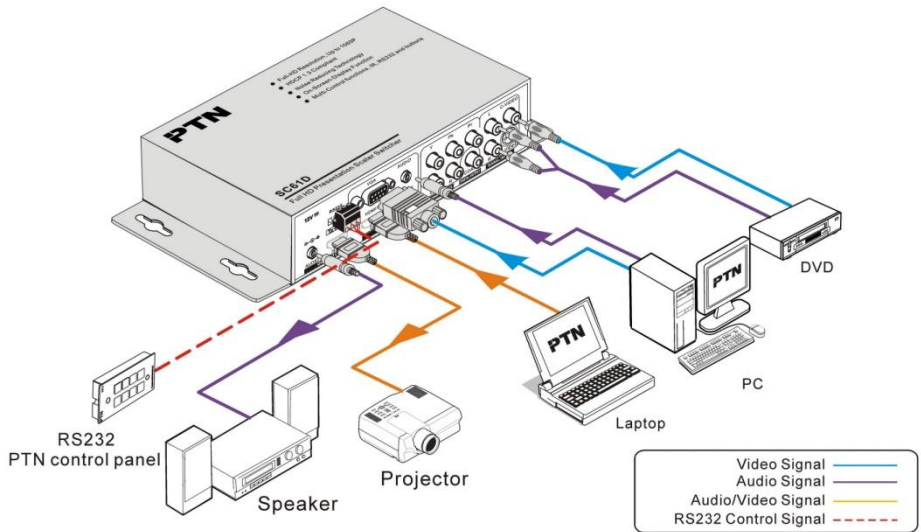
### 5.2. Audio input/output

- 3 Stereo audio input & 2 HDMI embedded audio input
- 3 simultaneous outputs. 3.5mm stereo audio, COAX (SPDIF), and HDMI embedded audio.
- Volume/Bass/Treble adjustable
- Audio status presets

### 5.3. USB input

- It works as the USB flash disk port, which is connected to the USB disk, reading the data inside. It can recognize the JPG picture and MP3 audio file.
- It is controlled by OSD operation.
- The picture and music can be played at the same time.
- The picture can be edited and presented.
- It works as the firmware updating port, connecting with the computer by USB cable, using the USB flash disk to uploading the firmware.

## 6. System Diagram



## 7. OSD Functions Introduction

SC61D provides a nice OSD operation menu, with various functions and language. The operation introduction is:

### 7.1. Picture Setting

The first icon from left of OSD menu is to set the picture parameter. It includes the pictures mode preset, color temperature, contrast, brightness, hue, saturation, sharpness, scale, and Advance picture adjust.

Some parameters are available depending on different input. The Advance Picture Adjust can set the Digital Noise Reduction, dynamic color, skin tone and Adaptive Luma adjustment function on or off. And DNR is suggested to be on, it can make the output image clear and smooth.

Please check the picture below:



### 7.2. Audio Setting

The Second icon from left of OSD menu is to set the audio/sound parameter. It includes the sound effect preset, bass, treble, balance, scene mode, surround and smart volume setting. Some parameters are available depending on different input.

Please check the picture below:



### 7.3. System Setting

The Third icon from left of OSD menu is the system setting. It includes the OSD language setting, Listen, output image freeze, VGA setting, output adjustment and output resolution change.

**Listen:** Audio output only. To resume video output, please press button “MENU”.

**VGA setting:** Adjust the H/V signal of VGA input, includes auto adjustment.

**Output adjustment:** Adjust H/V size and H/V position of the output. This function is available only with HDMI and VGA inputs.



### 7.4. USB operation menu

The last icon from left of OSD menu is the USB operation menu. You can enter the USB flash disk, to play music and picture. And, you can set the picture presentation order, and picture presentation speed.



When you enter this page, you can select the file from USB flash disk, which is plugged to SC61D. You can use the up/down/left/right buttons to control it.

The USB can play MP3 music and JPG picture. And it can show the lyric of MP3 file, if the lyric is in the same folder of MP3 file. The lyric should be in .LRC format.

Please check the MP3/ lyric playing below:



**NOTICE:**

- ① When you are in the USB folder page, the ENTER button is for confirm function. When use the IR remote , the OK button is for confirm function. The button “Menu” is the return function. The RETURN button on the IR remote is for return function.
- ② When the resolution is 1024x768, it does not support the USB flash disk.

③ When the resolution is changed, the OSD menu will be off.

## 8. Firmware Update

SC61D supports firmware field-updating, by USB flash disk. The Operation is:

- 1) Copy the file “MT23ATV.bin” to a USB flash disk. (The “MT23ATV.bin” file is provided/authorized by PTN engineering department)
- 2) Plug the USB flash disk to the SC61D USB port on it front panel.
- 3) Press the button “MENU” for 15 seconds or more, until it comes out an update OSD.
- 4) The SC61D will capture the new firmware from USB flash disk.
- 5) After update to the new firmware, reboot and send the command “**0617%**” to restore to factory settings.
- 6) After that, reboot again.

**Notice:** If send the RS232 command to restore factory setting is unsuccessful, please change the baud rate to 115200 and try again.

## 9. Communication Protocol and Command Codes

**Communication protocol:** RS232 Controlling Protocol

Baud rate: 9600

Data bit: 8

Stop bit: 1

Parity bit: none

Command	Function	Feedback Example
<b>0600%</b>	MUTE	Mute On
<b>0601%</b>	UnMute	Mute Off
<b>0602%</b>	Audio turn up	Volume: XX
<b>0603%</b>	Audio turn down	Volume: XX
<b>0604%</b>	Lock the front panel button	Panel Locked
<b>0605%</b>	Unlock the front panel button	Panel UnLocked
<b>01XX%</b>	Preset the volume. The XX is ranging from 00 to 99	Volume: XX
<b>02XX%</b>	Preset the brightness. The XX is ranging from 00 to 99	Brightness: XX
<b>03XX%</b>	Preset the contrast. The XX is ranging from 00 to 99	Contrast: XX
<b>04XX%</b>	Preset the saturation. The XX is ranging from 00 to 99	Saturation: XX

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<b>05XX%</b>	Preset the sharpness. The XX is ranging from 00 to 07	Sharpness: XX
<b>0606%</b>	Auto-adjust the input parameter(VGA only)	VGA Adjustment
<b>0607%</b>	Auto-adjust the color temperature	Color Temp: XX
<b>0608%</b>	ZOOM the image, set the aspect ratio	Aspect Ratio: XX
<b>0609%</b>	OK, for OSD selection	OK
<b>0610%</b>	Left of OSD	Left
<b>0611%</b>	Right of OSD	Right
<b>0612%</b>	Up of OSD	Up
<b>0613%</b>	Down of OSD	Down
<b>0614%</b>	set the picture mode	Picture Mode : XX
<b>0615%</b>	SM Mode	Sound Mode: XX
<b>0616%</b>	MENU of OSD	MENU
<b>0617%</b>	Reset to factory defaults	Factory reset
<b>0620%</b>	Switching to HDMI1 input	Source: HDMI 1
<b>0621%</b>	Switching to HDMI2 input	Source: HDMI 2
<b>0622%</b>	Switching to VGA input	Source: VGA
<b>0623%</b>	Switching to YPbPr input	Source: YPbPr
<b>0624%</b>	Switching to S-Video input	Source: SVIDEO
<b>0625%</b>	Switching to composite video input	Source: CVIDEO
<b>0626%</b>	Change the resolution to 1024X768 XGA	Resolution: XGA 1024X768
<b>0627%</b>	Change the resolution to 1280X720 720P	Resolution: 720P 1280X720
<b>0628%</b>	Change the resolution to 1280X800 WXGA	Resolution: WXGA 1280X800
<b>0629%</b>	Change the resolution to 1920X1080 1080P	Resolution: 1080P 1920X1080
<b>0630%</b>	Check the volume level	Volume: XX



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<b>0631%</b>	Check the input source	Source: XXXXXX
<b>0632%</b>	Check the output resolution	Resolution: XXXXXXXX
<b>0633%</b>	Check the image mode	Picture Mode : XX
<b>0634%</b>	Check the audio mode	Sound Mode: XX
<b>0635%</b>	Check the image aspect ratio	Aspect Ratio: XX
<b>0636%</b>	Check the brightness	Brightness: XX
<b>0637%</b>	Check the contrast	Contrast: XX
<b>0638%</b>	Check the saturation	Saturation: XX
<b>0639%</b>	Check sharpness	Sharpness: XX
<b>0640%</b>	Check the color temperature	Color Temp: XX
<b>0699%</b>	Check the firmware version	SC61D V XXXXX
<b>0644%</b>	OSD CHANNEL display able	OSD Source: Display
<b>0645%</b>	Shield OSD CHANNEL	OSD Channel (Source):No Display
<b>0646%</b>	Volume Bar display able	Volume Bar: Display
<b>0647%</b>	Volume Bar display unable	Volume Bar: No Display
<b>0648%</b>	Digital audio (HDMI and SPDIF) output able	Digital Sound Ouput: Enable
<b>0649%</b>	Shield digital audio (HDMI and SPDIF) output	Digital Sound Ouput: Disable
<b>0650%</b>	Check OSD CHANNEL display status	OSD Source: Display
<b>0651%</b>	Check Volume Bar display status	Volume Bar: Display
<b>0652%</b>	Check Digital audio output status	Digital Sound Ouput: Enable
<b>0655%</b>	Freeze output image	Freeze: Enable
<b>0656%</b>	Cancel the freezing of output image	Freeze: Disable

## 10. Troubleshooting & Maintenance

- 1) When images of terminal unit output with ghost, such as the projector output with ghost. Generally this is not a unit faulty, this may be caused by an incorrect setting on the projector or a bad quality of cable. Please check the projector's setting or try another high quality connection cable.
- 2) When there is a color losing or no video signal output, please check the input and output end connections of the cables.
- 3) When the remote controller doesn't works:
  - The battery has no power, please change a new one.
  - The controller was broken, please repair it.
- 4) When user cannot control the switcher by computer through its COM port, please check the COM port number in the software and make sure the COM port is in good condition.
- 5) When there is no output images:
  - Check if there is any signal at the input.
  - Check if there is any signal at the output.

We can check these by using an oscilloscope or a multimeter. If there is no signal input/output, maybe the input/output cables broken or the connectors loosen, please change for another cable.

  - If not the problem mentioned above, probably there is something broken inside the unit, please send it to the dealer for repairing.
- 6) If the **POWER** indicator doesn't work or no respond to any operation, please make sure the power cord connection is good.
- 7) If the output image is interfered, please make sure the system is grounded well.
- 8) If the static becomes stronger when connecting the BNC connectors, it probably due to the incorrect grounding, please correct it otherwise it would damage the switcher.
- 9) If the switcher cannot be controlled by the buttons on the front panel, RS232 port or IR remote, the switcher may have broken. Please send it to the dealer for repairing.

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## 11. Safety Operation Guide

In order to guarantee the reliable operation of the equipments and safety of the staff, please abide by the following proceeding in installation, using and maintenance:

- 1) The system must be earthed properly. Please do not use two blades plugs and ensure the alternating power supply ranged from 100v to 240v and from 50Hz to 60Hz.
- 2) Do not put the switcher in a place of too hot or too cold.
- 3) As the power generating heat when running, the working environment should be maintained fine ventilation, in case of damage caused by overheat.
- 4) Cut off the general power switch in humid weather or left unused for long time.
- 5) Before following operation, ensure that the alternating current wire is pull out of the power supply:
  - Take off or reship any components of the equipment.
  - Take off or rejoin any pin or other link of the equipment.
- 6) As to non-professional or without permission, please DO NOT try to open the casing of the equipment, DO NOT repair it on your own, in case of accident or increasing the damage of the equipment.
- 7) DO NOT splash any chemistry substance or liquid in the equipment or around.

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## 12. After-sales Service

- 1) If there appear some problems when running SC61D, please check and deal with the problems reference to this user manual. Any transport costs are borne by the users during the warranty.
- 2) You can email to our after-sales department or make a call, please tell us the following information about your cases.
  - Product version and name.
  - Detailed failure situations.
  - The formation of the cases.
- 3) We offer products for all three-year warranty, which starts from the first day you buy this product (The purchase invoice shall prevail).
- 4) Any problem is same with one of the following cases listed, we will not offer warranty service but offer for charge.
  - Beyond the warranty.
  - Damage due to incorrectly usage, keeping or repairing.
  - Damage due to device assembly operations by the maintenance company non-assigned.
  - No certificate or invoice as the proof of warranty.
  - The product model showed on the warranty card does not match with the model of the product for repairing or had been altered.
  - Damage caused by force majeure.

**Remarks:** For any questions or problems, please try to get help from your local distributor, or email PTN at: [support@PTN-electronics.com](mailto:support@PTN-electronics.com).