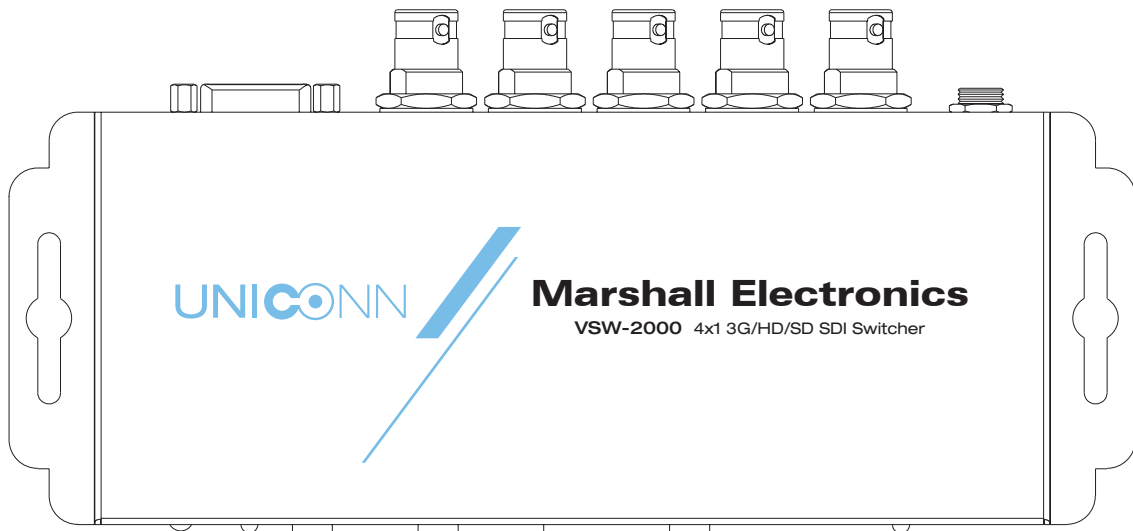


## Model No. VSW-2000

4x1 3G/HD/SD-SDI Switcher



## Operating Instructions

# Table of Contents

1. Introduction .....	3
2. Features .....	3
3. Package Contents .....	3
4. IR Remote Control .....	3
5. Specifications .....	4
6. Panel Descriptions .....	5
7. Hardware Installation .....	6
8. Connection Diagram .....	6
9. RS-232 Protocol .....	7
10. Warranty .....	8

## IMPORTANT SAFETY INSTRUCTIONS:



The VSW-2000 4x1 3G/HD/SD-SDI Switch has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the VSW-2000 should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Follow all instructions and warnings marked on this unit.
- Do not attempt to service this unit yourself, except where explained in this manual.
- Provide proper ventilation and air circulation and do not use near water.
- Keep objects that might damage the device and assure that the placement of this unit is on a stable surface.
- Use only the power adapter and power cords and connection cables designed for this unit.
- Do not use liquid or aerosol cleaners to clean this unit.  
Always unplug the power to the device before cleaning.

## 1. Introduction

---

The **VSW-2000** 4x1 3G/HD/SD-SDI Switch receives, equalizes, and re-clocks up to 4 SDI inputs and switches the desired input to SDI equipped monitors or receivers. The switch supports all 3G/HD/SD-SDI bit rates. Flexible control is provided through RS-232, IR remote, or front panel push buttons. VSW-2000 provides a convenient and cost effective solution in systems where simple operation plus high signal integrity is required.

## 2. Features

---

- Supports 3G/HD/SD-SDI video formats
- Auto switching between SD, HD, and 3G SDI signal
- Cable equalization and signal retiming
- Up to four inputs & one re-clocking SDI output
- Provides the equalized and reclocked\* transmission path up to 300m (1000ft) at SD-SDI, 150m (500ft) at HD-SDI or 90m (300ft) at 3G HD-SDI
- Multiple controls by RS-232, IR remote, and push button
- Locking type power connector

## 3. Package Contents

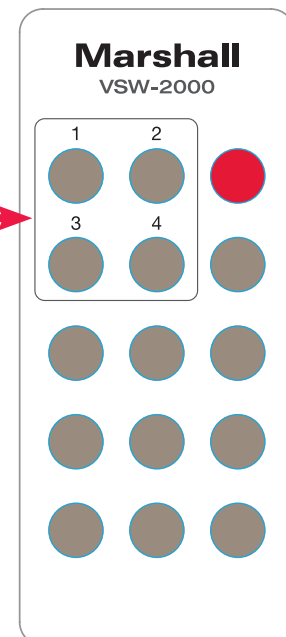
---

1. 1x VSW-2000
2. 1x IR controller
3. 1x 5V 4A power adapter
4. 1x User Manual

## 4. IR Remote Control

---

Input Selection Buttons

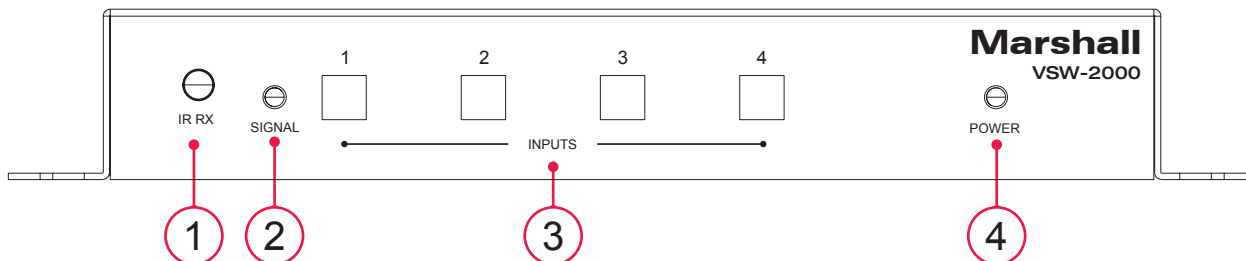


## 5. Specifications

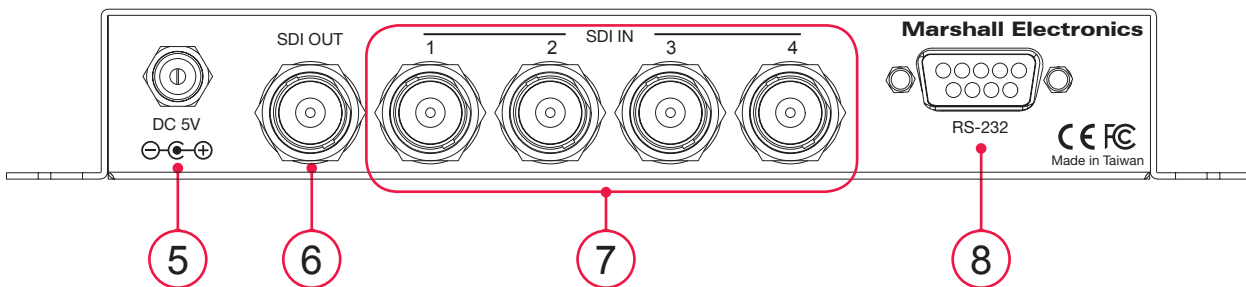
<b>Model Name</b>	VSW-2000 Video Switcher	
<b>SDI Inputs / Output</b>	3G/HD/SD-SDI	
<b>Auto 3G/HD/SD detection</b>	Yes	
<b>Supported protocols</b>	DVB-ASI at 270Mbps, SMPTE-259M, SMPTE-292M, SMPTE-424M, SMPTE-425M	
<b>Video bandwidth</b>	2.97Gpbs & 2.97/1.001Gpbs	
<b>Re-clocking function</b>	Yes	
<b>Cable equalization</b>	[3G] up to 90m (300ft) / [HD] up to 150m (500ft) / [SD] up to 300m (1000ft)	
<b>Audio support</b>	Yes	
<b>RP-198 pathological patterns</b>	Immune	
<b>Input</b>	4x BNC [SDI]	
<b>Output</b>	1x BNC [SDI]	
<b>Eye pattern characteristics [HD]</b>	Amplitude: Within 800mV (<10%) Rise overshoot: Less than 2% (<10%) Fall overshoot: Less than 2% (<10%)	Long time jitter: 0.195 UI (<1.0 UI) Timing jitter: 0.8 UI (<1.0 UI) Alignment jitter: 0.13 UI (<0.2 UI)
<b>Mechanical</b>		
<b>Housing</b>	Metal enclosure	
<b>Dimensions [L x W x H]</b>	Model: 165 x 71 x 26mm [6.5" x 2.8" x 1"] Package: 264 x 170 x 77mm[10.3" x 6.7" x 3"]	
<b>Weight</b>	Model: 1413g [14.5 oz] Package: 933g [2 lbs]	
<b>Fixedness</b>	Inter-locked power supply	
<b>Power supply</b>	5V 4A DC	
<b>Power consumption</b>	5 Watts [max]	
<b>Operation Temperature</b>	0~40°C [32~104°F]	
<b>Storage Temperature</b>	-20~60°C [-4~140°F]	
<b>Relative Humidity</b>	20~90% RH [no condensation]	

## 6. Panel Descriptions

### Front Panel



### Rear Panel

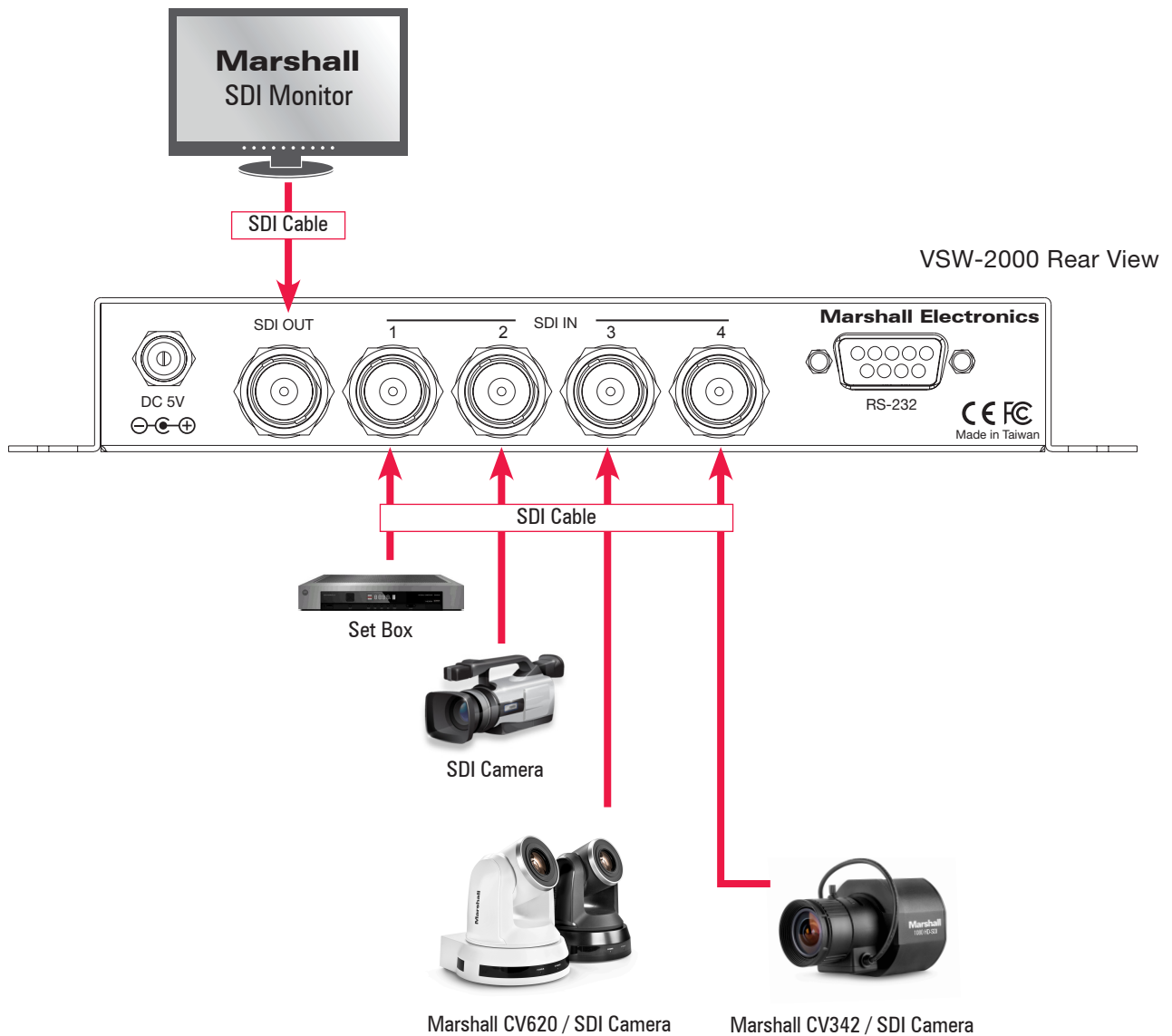


1. **IR:** Remote Sensor
2. **LED:** Signal indicator
3. **INPUT SELECTION BUTTON:** Input source selection
4. **LED:** Power indicator
5. **Power:** +5V DC latch-locking power connector
6. **OUTPUT:** 3G/HD/SD-SDI output
7. **INPUT:** 3G/HD/SD-SDI input 1-4
8. **RS-232:** Serial channel control / FW update

## 7. Hardware Installation

1. Connect display, recorder, etc. to SDI Output of VSW-2000
2. Connect the SDI input sources to the inputs of VSW-2000.
3. Screw on the 5V power supply unit to the locking power jack.
4. Use IR remote, RS-232, or front panel push button to switch between input channels.

## 8. Connection Diagram



## 9. RS-232 Protocol

<b>Baud rate:</b>	9600 bps
<b>Data bit:</b>	8 bits
<b>Parity:</b>	None

### RS-232 Functions:

1. VR = Display Version
2. IN0x = Switch to Input "x"
3. ST\_ALL = Display Input Formats

Version			
Function Description:			
Command			
Byte	Name	Value	Comment
0	V ascll	0x56	V
1	R ascll	0x52	R
2	End of file	0x0d	
Example			
Command: 0x56 0x52 0x0d			

Select channel			
Function Description:			
Command			
Byte	Name	Value	Comment
0	I ascll	0x49	I
1	N ascll	0x4e	N
2	0 ascll	0x30	0
3	Channel select	0x31~0x34	0x31:chanel 1
4	End of file	0x0d	
Example			
Command: 0x49 0x4e 0x30 0x31 0x0d			

Show Status			
Function Description:			
Command			
Byte	Name	Value	Comment
0	S ascll	0x53	S
1	T ascll	0x54	T
2	"_" ascll	0x5f	_
3	A ascll	0x41	A
4	L ascll	0x4c	L
5	L ascll	0x4c	L
6	End of file	0x0d	
Example			
Command: 0x53 0x54 0x5f 0x41 0x4c 0x4c 0x0d			

## 10. Warranty

---

Marshall Electronics warrants to the first consumer that this VSW-2000, Video Switcher will, under normal use, be free from defects in workmanship and materials, when received in its original container, for a period of one year from the purchase date. This warranty is extended to the first consumer only, and proof of purchase is necessary to honor the warranty. If there is no proof of purchase provided with a warranty claim, Marshall Electronics reserves the right not to honor the warranty set forth above. Therefore, labor and parts may be charged to the consumer. This warranty does not apply to the product exterior or cosmetics. Misuse, abnormal handling, alterations or modifications in design or construction void this warranty.

No sales personnel of the seller or any other person is authorized to make any warranties other than those described above, or to extend the duration of any warranties on behalf of Marshall Electronics, beyond the time period described above.

**Note:**

Due to constant effort to improve products and product features, specifications may change without prior notice.

### **Marshall Electronics, Inc.**

1910 East Maple Ave. El Segundo, CA 90245

Tel: (800) 800-6608 / (310) 333-0606 • Fax: 310-333-0688

[www.LCDracks.com](http://www.LCDracks.com)

[support@marshall-usa.com](mailto:support@marshall-usa.com)