The VS4x1(R) and VS8x1(R)

Video Switcher
Four/Eight Input
Vertical Interval
with RS232

Manual Version 4.0

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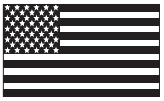
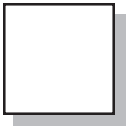


Made in USA



Four/Eight Input Switcher

Introduction

Congratulations on your purchase of VS4x1/VS8x1 Vertical Interval Switcher. This manual will explain the various functions of the VS4x1/VS8x1 (as well as the RS232 options, model VS4x1R/VS8x1R). Unless otherwise stated, all functions of the VS4x1 are the same for the VS8x1.

Overview

The model VS4x1 is a four (4) input active switcher (VS8x1 is an eight (8) channel active switcher). The appropriate front panel channel switch selects the output. An LED indicates the currently selected active channel. Switching from one video source to another is done during the vertical interval. Both products use digital logic that inhibits the selection of an inactive input (no video). This is a safety feature that can be disabled, explained later. The logic detects sync to determine if video is present.

Operation

When a channel is selected, the switcher waits for the start of the next vertical interval to change to the selected input. If the inputs are synchronous (genlocked), this will allow a seamless transition from one input to another. All inputs are DC clamped, at the back porch (color burst), to ground by the video switcher. The output is also ground referenced. If there are any level shifts on the incoming video, the video switcher will eliminate these offsets and ground reference the outgoing video.

Input Termination

Each channel input has a 75 Ohm termination resistor. This termination may be removed, resulting in the video switcher being in the bridging or HiZ mode. This allows looping of the inputs (looping adapter part number BNC-

LOOP). To change the input termination, remove the front panel, slide the top cover off, and then remove the jumper shunt for each individual video input (located next to the BNC connectors, W1 for channel 1, W2 for channel 2, etc.). A handy place to store the shunt is hanging off one of the jumper pins.

Video (Sync) Detection

The video switcher allows selection of only active (input video present) input channels. This feature may be disabled by either of two ways, front panel control or internal jumper/DIP switch. For front panel control, turn power off, press and hold input channel 2 and turn power on. The video switcher will now select any input, regardless if video is present. To cancel this feature, cycle power. When the internal switch/jumper method is used, then cycling power has no effect.

Jumper/Switch Setting for the Sync Detect

For the VS4x1 there is a DIP switch located inside the unit, just behind the front panel. Locate the small four (4) position DIP switch labeled S6. Move switch #2 from the open (up) position to the closed (down) position. Turn power on, and now any input can be selected regardless if there is input video.

For the VS8x1 there is a jumper (W10) located behind the front panel. A shunt (jumper) has been included with the unit and is hanging on one of the pins. Place the shunt onto both pins of W10. Turn power on, and now any input can be selected regardless if there is input video.

Power

The unit is powered from an external 12Vdc source. Polarity insensitive, the video switcher has an auto polarity feature. Do not use AC, use only DC.

Remote Control via RS232 (R Version)

An option is remote control via RS232. The data transmission is 2400 baud 8-N-1. Any terminal emulation

program such as Windows Terminal (HyperTerminal), or ProComm is all that is required to communicate with the video switcher.

To cause the device to switch to an active input (video is present), issue the command: Vx, where x is the channel number (V2 switches to input #2). The VS switcher will echo back to the computer Vx (where x is the channel number). If there is no video present (and detection of video is enabled) the Vx command will echo back to the computer "NV" (no video) and not switch. If video detection is disabled, the VS switcher will only echo back Vx for channels that have active video present on the input, but will switch to wherever the command stated.

Audio Switching Using the AS4x1R Audio Switcher

If both audio and video are to be switched, then an AS4x1R audio switcher is required along with the RS232 controlled video switcher. In this configuration, the video switcher becomes the controller to the audio switcher. With both units connected using a RS232 cable (3.5mm stereo headphone type cable, with a male plug on each end, Radio Shack #42-2387), switching of the video switcher input will cause the audio switcher to follow to the same input channel.

The audio switcher can do audio breakaway from the video switcher simply by using the front panel switches on the AS4x1R. This method of changing the audio input will not affect which video channel is selected. To have the audio input changed back to the same video input, simply reselect the current video input on the video switcher. If you do not want the audio to switch, but you do want the video to switch, hold down the appropriate audio input switch while changing the video input switch.

This function, the AS4x1R following the VS4x1R/VS8x1R, can be disabled. If this function is disabled, the audio switcher will not follow the switching commands of the video switcher. As shipped, the video switchers have the jumpers set to enable the follow mode function.

To disable the follow mode for the VS4x1, remove the front panel, and slide the top cover off. Locate the four position DIP switch labeled S6. Move switch #1 from the closed (down) position to the open (up) position. The VS4x1 switcher will not send data to the AS4x1R or echo data to the computer.

The follow mode function can be re-enabled two ways, front panel control or internal jumper. Setting DIP switch S6 #1 to closed (down). For front panel control, press and hold video switcher channel #1 while power is turned on. This method operates in follow mode until power is cycled, follow mode will then be disabled.

To disable follow mode on the VS8x1R, remove the front panel and slide the top cover off. Located behind the front panel is a shunted jumper (W9). Remove this shunt. Replace the top cover and front panel. The video switcher will not echo data to the computer, or send data to the AS4x1R.

The follow mode function can be re-enabled two ways. Reinstall W9 or front panel control. For front panel control, press and hold video switcher channel #1 while power is turned on. This method operates in follow mode until power is cycled, follow mode will then be disabled.

If follow mode is off, the video switch does not echo via the RS232 port when the channel switches are pressed. If the follow mode is on then the switch echoes the commands. Example: with follow mode on when channel 2 is pressed, then B2 is sent out the RS232 port.

If the commands to the video switch are via the RS232 port (vs the front panel) then the switch always echoes back the command. Example: regardless of whether follow mode is on or off, if V2 is sent to the video switch then it echoes back V2. There is one case where in the echo returned is different. If sync detect is on and an inactive channel is selected the video switch echoes NV (no video). If sync detect is off, then there is no echo for inactive inputs.

Jumper/switch settings:

VS4x1R:

Switch S6	Function	Position
1	Follow Mode	Up-Off, Down-On
2	Sync Detection	Up-On, Down-Off
3	not used	
4	not used	

VS8x1R:

Jumper	Function	Position
W9	Follow Mode	In-Enabled, Out-Disabled
W10	Sync Detection	In-Enabled, Out-Disabled

RS232 Commands:

Command	Function
Vx	Switches video to “x” channel
Ax	Switches audio to “x” channel
Bx	Switches both video and audio (AS4x1R) to “x” channel
CC	Responds with Current Channel, Vx (VS8x1R only)

Responses from switchers:

Responses	Function
NV	No Video present (if video detect is enabled)
KE	Keyboard Error (invalid code sent)
KT	Keyboard Time-out error (5 second time-span to get the data sent to the VS switcher)
Vx	Successful video switch to the “x” channel (only if video is present on the input)
Bx	Used in conjunction with the AS4x1R, successful audio/video switch to the “x” channel (only if video is present on the input)

Specifications:

Video

Switching: Vertical Interval
Bandwidth: 25 MHz
Diff Gain: 0.1 %
Diff Phase: 0.1 deg
S/N: 60 dB
Crosstalk: 60 dB
Output: 75 Ohms 1% DC Clamped
Switching Delay Between Channels: 200 mS

General

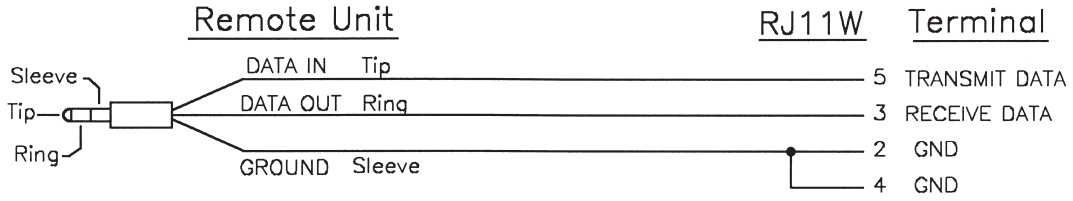
Video Connector: BNC, 4-Pin (Mini DIN–Y/C)
Size: VS4x1: 4.1W x 1.5H x 5.5D inches,
VS8x1: 5.6W x 1.5H x 6.5D inches
Power: 8 to 14 Vdc polarity insensitive
Current: VS4x1: 125 mAdc,
VS8x1: 150 mAdc
Wall Module Power Supply Included (center Negative)
Rack Mount VS4x1: Model RM-4 Holds 4 units
Rack Mount VS8x1: Model RM-3 Holds 3 units
There are also rack mounts that hold a mix of VS4x1 and VS8x1, call us for details.

RS232

Protocol: 2400 Baud 8N1
Connector: 1/8 inch stereo (3.5 mm) 3 conductor
Pinout: Tip-Receive Ring-Transmit Sleeve-Ground

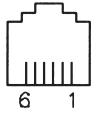
SERIAL INTERFACE CABLE

3.5 mm Type



1/8 inch (3.5 mm) Stereo Male Plug

Radio Shack 274-284 or 42-2387
Mouser 161-3504 Audio Jack



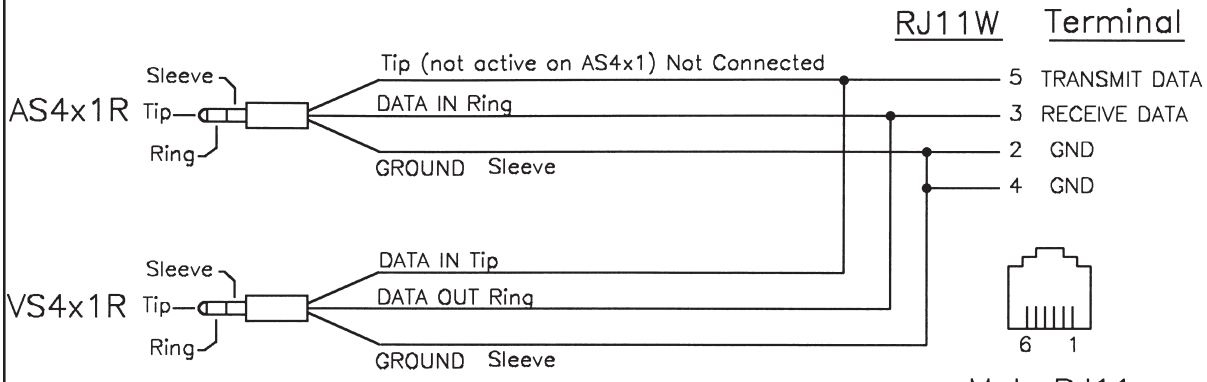
Male RJ11

6 Position, 4 Wire

Title	SERIAL INTERFACE CABLE	
Size A	BURST ELECTRONICS Corrales, New Mexico 87048	Rev A2
Date 1-4-99	Drawn by WJK	
Filename RSCBL_A2.SCM	Sheet 1 of 1	

VS4x1R/AS4x1R SERIAL INTERFACE CABLE

3.5 mm Type



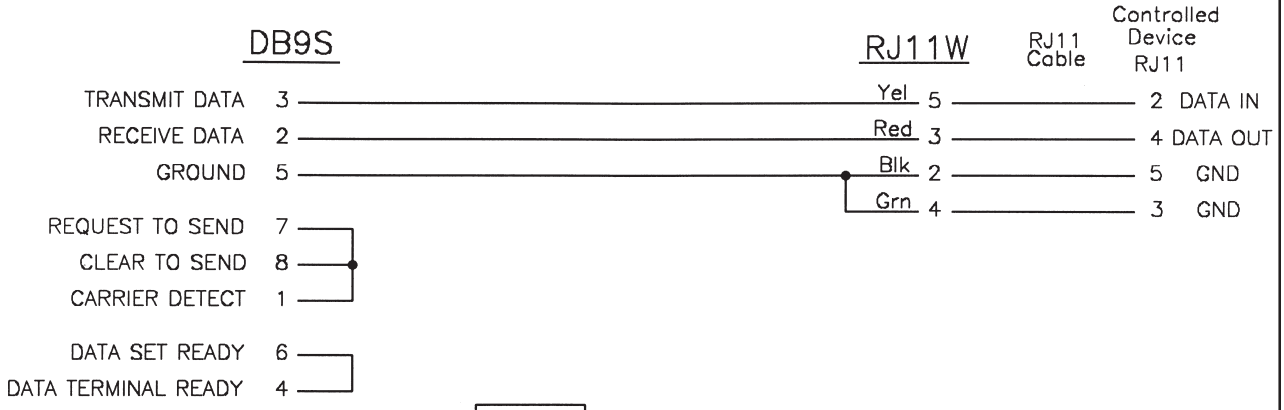
1/8 inch (3.5 mm) Stereo Male Plug

Radio Shack 274-284 or 42-2387
Mouser 161-3504 Audio Jack

Title	V/AS4x1R SERIAL CABLE	
Size A	BURST ELECTRONICS Corrales, New Mexico 87048	Rev A
Date 1-11-99	Drawn by WJK	
Filename XS41CBLA.SCM	Sheet 1 of 1	

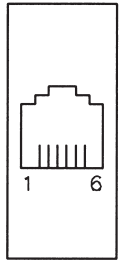
SERIAL INTERFACE ADAPTER

(DB9 TYPE)



Socket (Female) Type

DB9 VIEW

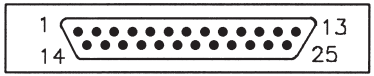


RJ11 VIEW

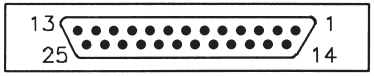
Title	SERIAL INTERFACE ADAPTOR	
Size A	BURST ELECTRONICS Corrales, New Mexico 87048	Rev D
Date 3-5-98	Drawn by WJK	
Filename db9_d.scm	Sheet 1 of 1	

SERIAL INTERFACE
(DB25 TYPE)

Direct Modem Connection RS232 Modem Port DB25 Male		Computer Connection RS232 Serial Port DB25 Female	RJ11W	RJ11 Cable	Controlled Device RJ11	
3	TRANSMIT DATA	2	Yel 5		2	DATA IN
2	RECEIVE DATA	3	Red 3		4	DATA OUT
7	GROUND	7	Blk 2		5	GND
			Grn 4		3	GND
4	REQUEST TO SEND	4				
5	CLEAR TO SEND	5				
8	CARRIER DETECT	8				
6	DATA SET READY	6				
20	DATA TERMINAL READY	20				



Plug (Male) Type



Socket (Female) Type

DB25 VIEW

RJ11

1 8 RJ12

Title	SERIAL INTERFACE ADAPTOR		
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Date 3-5-98		Drawn by WJK	
Filename db25_d.scm		Sheet 1 of 1	