OCEAN MATRIX ®

Instruction Manual

Thank you for purchasing an Ocean Matrix component. This unit is designed to give you years of trouble free professional operation for your most demanding applications. It is our goal to develop long term part-nerships with our customers through our commitment to exceed their expectations.

OMX-SW6x1B

For Repair Information and to view the entire Ocean Matrix product line, please visit our web site.

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1 Introduction

Congratulations on purchasing your **OMX-SW6x1B** *6x1 Vertical Interval Switcher*, which comes with a power cord, null-modem adapter, Windows®-based control software and this instruction manual.

This product is ideal for the following typical applications:

- Video production studios and professional presentation systems
- Live broadcast, for switching between cameras in real-time
- CCTV and security applications

2 Getting Started

We recommend that you

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual

3 Overview

The **OMX-SW6x1B** is a high performance 6x1 vertical interval switcher for composite video and balanced audio signals. Switching during the vertical interval ensures glitch-free switching when sources share a common reference sync.

In addition the **OMX-SW6x1B**:

- Has a bandwidth of 250MHz, that ensures transparent performance even in the most critical production, presentation, or broadcast applications
- Includes switching synchronization either to an external reference or the incoming video
- May be used as a single unit or expanded to larger switching systems
- Can be operated in parallel for switching component signal formats
- Can be controlled via the front panel buttons, RS-232, RS-485 and contact closure

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality and position your **OMX-SW6x1B** in a location free from moisture and away from excessive sunlight and dust

4   Your OMX-SW6x1B 6x1 Vertical Interval Switcher

Figure 1 illustrates the front and rear panels of the **OMX-SW6x1B**. Tables 1 and 2 define the front and rear panels of the **OMX-SW6x1B**, respectively.

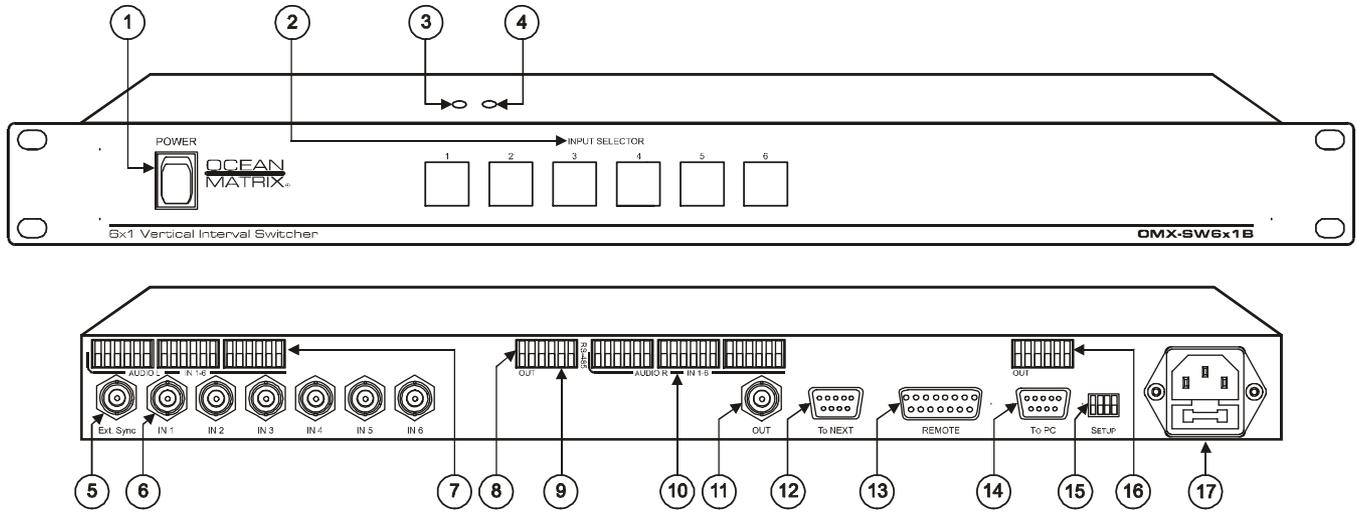*Figure 1: OMX-SW6x1B 6x1 Vertical Interval Switcher*

Table 1: Front Panel OMX-SW6x1B 6x1 Vertical Interval Switcher Features

#	Feature	Function
1	*Power* Switch	Illuminated switch supplying power to the unit
2	*IN* Buttons[1]	Select the input to switch to the output (from 1 to 6)
3	Internal Cable EQ. Trimmer	Internally located and accessed through hole on the underside[2] of the machine. It allows, if required, cable equalization adjustment
4	Internal LEVEL Trimmer	Internally located and accessed through hole on the underside[2] of the machine. It allows, if required, output level adjustment

Table 2: Rear Panel OMX-SW6x1B 6x1 Vertical Interval Switcher Features

#	Feature	Function
5	*Ext. Sync* BNC Connector	Connect to the external sync/composite video source
6	*IN* BNC Connectors	Connect to the composite or single component[3] video sources
7	*AUDIO L IN-1-6* Terminal Block Connectors	Connect the left stereo audio input signals (from 1 to 6)
8	*OUT* Left Terminal Block Connector	Connect to the left channel audio output
9	*RS-485* Terminal Block Port	For bi-directional communication with another switcher or PC via the RS-485 interface
10	*AUDIO R IN-1-6* Terminal Block Connectors	Connect the right stereo audio input signals (from 1 to 6)
11	*OUT* BNC Connector	Connect to video acceptor
12	*To NEXT* DB 9 port	Used for looping to the next switcher
13	*REMOTE* DB 15 port	Used for remote contact closure control
14	*To PC* DB 9 port	Connects to the PC or other serial controller
15	*SETUP* Dipswitches	Dipswitches for setting the machine #
16	*OUT* Right Terminal Block Connector	Connect to the right channel audio output (three left pins; the three right pins are not used)
17	Power Connector with *Fuse*	AC connector enabling power supply to the unit

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1 Selected button illuminates

2 Insert a screwdriver into the small hole and carefully rotate it, trimming the appropriate level

3 See section 7.4

5 Installing on a Rack

This section describes what to do before installing on a rack (see section 5.1) and how to install on a rack (see section 5.2).

5.1 Before Installing on a Rack

Before installing the machine in a 19" rack, be sure that the environment is within the recommended range:

Table 3: Recommended Ambient Temperature and Humidity Range

Operating temperature range	+5 to +45 Deg. Centigrade
Operating humidity range	5 to 65 % RHL, non-condensing
Storage temperature range	-20 to +70 Deg. Centigrade
Storage humidity range	5 to 95% RHL, non-condensing

5.1.1 ⚠ CAUTION!!

When installing the **OMX-SW6x1B** in a 19" rack, avoid hazards by taking care that:

1. It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi-unit rack assembly may exceed the room ambient temperature.

2. Once rack-mounted, enough air will still flow around the machine.

3. The machine is placed straight in the correct horizontal position.

4. You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.

5. The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to supply connections other than direct connections to the branch circuit (for example, the use of power strips), and that you use only the power cord that is supplied with the machine.

5.2 Instructions for Rack-Mounting

To install the **OMX-SW6x1B** in a 19" rack, place the ears of the machine against the rack rails, and insert the screws through each of the four holes in the rack ears[1].

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1 Always mount the machine in the rack before you attach any cables or connect the machine to the power

6   Connecting the Switcher

To connect the **OMX-SW6x1B**, do the following[1]:

1. Connect up to six composite video sources (for example, six composite video players), to the composite video BNC connector.

2. Connect the composite video BNC connector to an acceptor (for example, a composite video recorder).

3. Connect the terminal block connectors as follows:

The AUDIO L inputs[2]:

The OUT left audio output and the RS-485:

The OUT right audio output:

4. Set the dipswitches (see section 6.2).

5. If required, connect a PC to the To PC RS-232 port.

6. Connect the power cord[3].

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1 Switch OFF the power on each device before connecting it to your OMX-SW6x1B. After connecting your OMX-SW6x1B, switch on its power and then switch on the power on each device

2 Similarly connect the AUDIO R (right) inputs

3 We recommend that you use only the power cord that is supplied with this machine

6.1 Connecting a PC

You can connect a PC (or other controller) to the **OMX-SW6x1B** via the RS-232 port.

To connect using the Null-modem adapter provided with the machine (recommended method):

- Connect the RS-232 DB9 rear panel port on the **OMX-SW6x1B** to the Null-modem adapter and connect the Null-modem adapter with a 9-wire flat cable to the RS-232 DB9 port on your PC

To connect without using a Null-modem adapter:

- Connect the RS-232 DB9 port on your PC to the RS-232 DB9 rear panel port on the **OMX-SW6x1B**, as Figure 2 illustrates
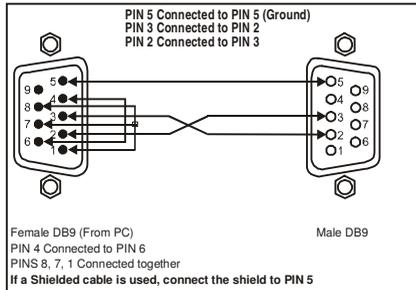

Figure 2: Connecting a PC without using a Null-modem Adapter

6.2 Setting the Dipswitches

The dipswitches (see Table 4) on the rear panel should be set when the switcher is operated via the RS-232 or RS-485/422 connector, or when it is interconnected with other switchers. These switches allow proper configuration of the control signals received and transmitted through the RS-232 control port. The switcher allows master/slave configurations. This allows switchers that are interconnected to operate independently, or in conjunction with each other.

Table 4: Dipswitch Settings

Switcher #	DIP Switch #			
	1 (Reply)	2	3	4
Machine 1 (Master)	ON	ON	ON	ON
Machine 2 (Slave)	ON or OFF	ON	ON	OFF
Machine 3 (Slave)	ON or OFF	ON	OFF	ON
Machine 4 (Slave)	ON or OFF	ON	OFF	OFF
Machine 5 (Slave)	ON or OFF	OFF	ON	ON
Machine 6 (Slave)	ON or OFF	OFF	ON	OFF
Machine 7 (Slave)	ON or OFF	OFF	OFF	ON
Machine 8 (Slave)	ON or OFF	OFF	OFF	OFF

Note: The Slave "Reply" settings are all ON or all OFF, depending on the requirements of the system. The Master "Reply" setting is always ON.

6.3 Jumpers, their Uses and Set-up Requirements

The switcher has additional adjustments and settings. These include the internal jumpers.

WARNING!

Mains voltage is accessible inside the switcher, so always turn off the switcher and remove its power cable from the mains socket before removing its cover.

The jumpers' functional operation is described below:

- Each switcher input has its own internal jumpers, numbered from J22 to J27 and they are factory located in the position that provides a 75ohm input termination. If the 75ohm termination is not required, the jumper must be relocated to its alternate position (floating on the pin remote from the input socket and not connected in any circuit). The particular input is now "High-Z" (not 75ohm terminated) and may be used for looping

- When two switchers are to be interconnected to provide a 6 input, 2 output (6x2) configuration by looping Input #1 of switcher #1 to Input #1 of switcher #2, etc., J35 must be located in its alternate position in all of the switchers. This is also the case for configurations 6x3, 6x4, and so on, using 3, 4, or more switchers

- When two switchers are to be interconnected to provide a 12 input, 1 output (12x1) configuration, J35 must be located in its factory set position in all of the switchers. This is also the case for configurations 18x1, 24x1, and so on, using 3, 4, or more switchers

- Jumper J20 is used to define the Sync video source for all the switcher inputs, so that Vertical Interval Switching can be assured. The jumpers are factory located for an External Sync source. If the sync of the video source on Input #1 is preferred, then J20 must be relocated to its alternate position in any one of the switchers

- When switchers are to be interconnected, the switcher that contains the active video sync source must be identified by all the switchers to ensure Vertical Interval Switching throughout the system. J34 is the jumper to be used for this task

7   Controlling the Switcher

The **OMX-SW6x1B** can be controlled via:

- The front panel buttons
- Direct remote contact closure via a remote socket on the back panel (see Figure 3)
- A PC or other remote control via the switcher's RS-232 or RS-485/422 connector
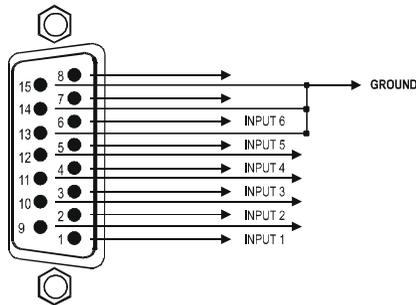

Figure 3: Control via the Remote Socket on the Back Panel

There are three different options for the RS-232 or RS-485/422 remote control:

- A PC that communicates with the switcher directly
- A Serial remote control unit
- Any RS-232 or RS-485/422 controller, which is programmed according to the protocol of the switcher

7.1 Using the PC Control Software

To operate interconnected switchers via RS-232 and the Windows®-based control software, perform the following steps, before connecting the power cables:

1. Set up the dipswitches on each switcher (see section 6.2).

2. Set the jumpers (see section 6.3).

3. Connect the first switcher to the second switcher via the RS-485 communication ports (connect "A" to "A", and "B" to "B"). Similarly, continue the connection from the second to the third switcher, and so on.

4. Connect the first switcher to the PC's COM port, via the null-modem adapter provided (see section 6.1).

5. Make sure that the RS-232 cable is not more than 30 feet in length.

6. If several machines are looped, interconnect as described in the relevant sections from 7.2 to 7.5.

7. Connect the power cable of each switcher to the mains and turn the power on each switcher ON.

8. Activate the computer and the Windows®-based software, then click the mouse button at the appropriate location on the monitor display to operate all the switchers simultaneously.

7.2 Adding Outputs

Two **OMX-SW6x1B** switchers may be interconnected to function as a 6x2 switcher by connecting the same numbered sources to the same numbered inputs of both switchers as illustrated in Figure 4. However, before doing so, each switcher input has an internal jumper that must be properly set up to avoid double loading.

To create a 6x2 switcher using 2 **OMX-SW6x1B** machines, do the following:

1. After disconnecting the switcher from the mains voltage, carefully remove the cover of the first switcher that is to receive the source signals, remove jumpers J21 to J27 and relocate them in their alternate positions (floating on the pin remote from the input socket and not connected in any circuit).

2. The input impedance of each input is now "High-Z" (not 75ohm terminated) and is therefore suitable for this application. Inside the second switcher, leave the terminating jumpers stay in place, providing 75ohm terminations. Thus, you do not have to open the second switcher. Carefully close the first switcher.

3. Connect the output from video source #1 to the first switcher input #1, then to the second switcher input #1 using a T or Y connector. Repeat for source #2 and input #2, and so on.

4. Connect one acceptor to the output of one switcher and another acceptor to the output of the other switcher. You now have a 6 input switcher complex with two outputs.

5. You can continue to expand the number of outputs by adding a third switcher, to obtain a 6x3 switcher, and so on.
   In such cases, relocate to their alternate position, all the input jumpers in all the switchers except the last, so that all the lines are properly terminated by 75ohm. Audio can be connected in a similar manner, but you do not have to open the switchers and remove the jumpers, just connect the wires from the audio input to the audio input. There is no need for special termination since the input impedance is high.

6. For RS-232 control of the system, connect the PC to the Master switcher via the null modem adapter.

7. Each switcher in the configuration should be allocated a unique machine number and the "Reply" option should be set to ON (see Table 4).
   Jumper J35 should be relocated to its alternate position.

8. The system may also be controlled via its RS-485 port (see section 7.1).
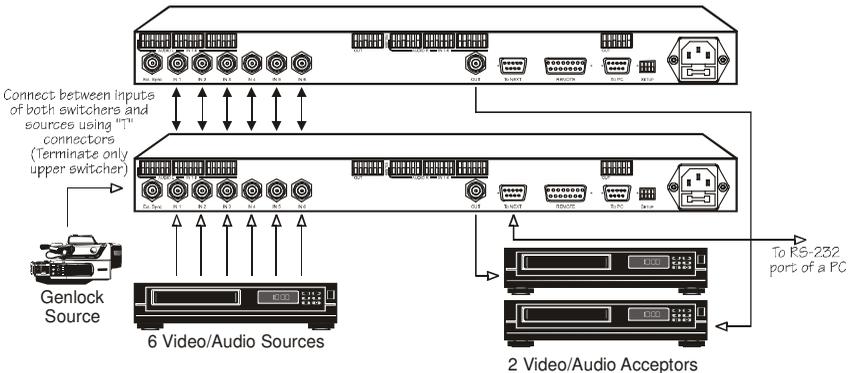

Figure 4: Combining Two Switchers to Create a 6x2 Switcher

7.3 Adding Inputs

Up to eight **OMX-SW6x1B** switchers can be interconnected to function as a 12x1 or an 18x1 switcher, as follows:

1. Make sure that jumper J35 in at least one of the switchers is set to its factory located position. If necessary, carefully remove the covers of the switchers to do so.

2. Connect a straight, 9-wire flat cable from the "To Next" DB-9 connector on the first switcher to the "To Next" DB-9 connector on the second switcher, from the second to the third and so on, until all the required switchers are interconnected. Make sure that the interconnecting lengths of cable are as short as possible.

3. Interconnect the switchers via their RS-485 ports ("A" to "A", "B" to "B", and so on).

4. Assign a unique machine number to each of the switchers (see Table 4).

5. On all the units, set the Dipswitch "Reply" option to ON.

6. To feed the sync information from one of the units to all the others, interconnect the units via their "To Next" connectors using a flat cable. In this case, jumper J34 must be set in its factory located position in the unit with the Sync source, but in its alternate position in the others.

7. For RS-232 control of the system, connect the PC to the Master switcher via the null modem adapter. Each switcher in the configuration should be allocated a unique machine number and the "Reply" option should be to "ON" (see Table 4). The system may also be controlled via RS-485.

8. Connect the sources to the appropriate switcher inputs.

9. Connect the power cable of each switcher to the mains supply and turn ON the power on each switcher.

10. You now have a 12 or 18, input switcher complex, with one output.

7.4 Video Component and YC Switching

An important application for interconnected switchers is in professional component video switching, where smooth switching is required, free from transient effects. Four switchers of the same type are required for RGBS systems, three for RGB or YUV systems, and two for YC systems. The following describes how to set up the RGB video component application with five professional video sources, each with Red, Green and Blue (RGB) outputs (Sync on Green).

> Note: In the following description, "R", "G", "B" refers to three different switchers required for the RGB implementation.

1. Interconnect three, **OMX-SW6x1B** switchers via their RS-485 ports ("A" to "A", "B" to "B", and so on).

2. On all the units except one, set the DIP 1 (Reply) OFF.

3. Set all the switchers to the same Machine number (DIPs 2, 3 and 4).

4. If RS-232 control is required, connect the PC via the null modem adapter to the unit in which the "Reply" option is set to ON (the system may also be controlled via RS-485).

5. To synchronize the machines (for vertical interval switching) to input#1 of the G unit, daisy-chain from G's input #1 to the ext. sync input of R and continue to the ext. sync input of B (using "T" connectors). Place the following jumpers in their alternate positions: J22 and J20 in the G unit, and J21 in the R unit. Also, ensure that the following jumpers are in their factory default positions: J34 in all the units; J20 in the R and the B units; and J21 in the B unit. To synchronize using an external sync signal, configure R and B as described above, but this time daisy chaining from G's ext. sync. Connect the external sync to G and set G's jumper J20 and J22 to their factory default positions and J21 to its alternate position.

6. Now connect the R, G and B outputs of camera #1 to input #1 on each of the switchers respectively, those of camera #2 to input #2 on each of the switchers respectively, and continue until all five camera R, G and B outputs have been connected to the appropriate switcher inputs, in the same order. Let us call them switchers R, G and B.

7. Connect the single outputs of switchers R, G and B to the R, G and B inputs, respectively, of a professional acceptor, such as a monitor or VCR.

8. Turn the power ON and select the input number to be switched to the acceptor.

7.5 Controlling Several Independent Switchers via a Single PC Port

1. Assign unique machine numbers to each switcher.

2. Connect via the null modem cable from the PC to the "Master" machine.

3. Interconnect the switchers via their RS-485 ports ("A" to "A", "B" to "B", and so on).

8 Technical Specifications

Table 5 includes the technical specifications[1]:

Table 5: Technical Specifications of the OMX-SW6x1B Vertical Interval Switcher

INPUTS:	6 composite/single component video, 1Vpp/75Ω, on BNC connectors	
	6 audio balanced stereo, +4dBm/10kΩ, on 2-part, terminal block connectors	
	One external sync input (or composite video) 1Vpp/75Ω, on BNC connector	
OUTPUTS:	1 composite/single component video, 1Vpp/75Ω, on BNC connector	
	1 audio balanced stereo up to +28Vpp/50Ω (24dBm), on terminal blocks	
BANDWIDTH (-3dB):	VIDEO: 250MHz -3dB	AUDIO: 55kHz, -0.ldB.
DIFF. GAIN:	0.04 %	
DIFF. PHASE:	0.03 Deg.	
K-FACTOR:	<0.05%	
S/N RATIO:	VIDEO: >77dB.	AUDIO: >95dB (unweighted)
CROSSTALK (all hostile):		AUDIO: -79dB
CONTROLS:	6 illuminated front panel buttons, underside accessible trimmers for video gain (-1.2 to 1.8dB Luma), cable EQ. (0 to 1.3dB) RS-232, RS-485, IR remote, dry keyboard extension	
SWITCHING:	Vertical interval	
NON LINEARITY	<0.1%	
AUDIO THD + NOISE:	0.013%	
AUDIO 2nd HARMONIC:	<0.003% (1kHz)	
POWER SOURCE:	230VAC, 50/60 Hz (115VAC U.S.A.)	
POWER CONSUMPTION:	18.4VA	
DIMENSIONS:	19" x 7" x 1U rack mountable	
WEIGHT:	2.88kg (~6.4lbs) approx	
ACCESSORIES:	Power cord, Null modem adapter, Windows®- based control software	

9 Troubleshooting

The following sections describe possible problems and their solution.

NOTES:

1. Please note that if the output signal is disturbed or interrupted by very strong external electromagnetic interference, it should return and stabilize when such interference ends. If not, turn the power switch off and on again to reset the machine.

2. If the recommended actions still do not result in satisfactory operation, please consult your dealer.

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1 Specifications are subject to change without notice

9.1 Power and Indicators

Problem	Remedy
No Power	Confirm that the switch is in the "ON" position, and that the lamp is illuminated.
	Confirm that power connections are secured at the amplifier and at the receptacle. Make sure the receptacle is active, outputting the proper mains voltage.
	If there is still no power, check the fuse. Remove power cord from the AC outlet and from the machine and then, using a flat head screwdriver, remove the fuse holder located directly below the power connector. Confirm that the fuse is good by looking at the wire connected to the ends of the fuse. If the wire is broken, replace the fuse with another, with the same value.

9.2 Video Signal

Problem	Remedy
No video at the output device, regardless of input selected.	Confirm that your sources and output device are powered on and connected properly. Video signals connected to the input of your switcher should be of an identical signal format at the output of your source. Video signals at the output of your switcher should be of an identical signal format as at the input of your display or recorder.
	Confirm that any other switchers in the signal path have the proper input and/or output selected.
Video level is too high or too dim.	Verify that the video line is well interfaced through 75ohm impedance, otherwise it results in a video level that is too high or too dim when looping is performed and the termination switches are not in proper position.
	Confirm that the connecting cables are of high quality, properly built and terminated with 75ohm BNC connectors. Check level controls located on your source input device or output display or recorder.
Weak switcher input signals	The switcher contains two internal trimmers, accessed via two holes in the base of the switcher. These allow, if necessary, to adjust switcher output signal level. For example, if you are using a long cable with heavy losses, you can compensate for it by fine-tuning the signal using the two trimmers. One trimmer adjusts the gain of the whole video signal and the other adjusts only the high frequencies of the video which have been degraded by a low quality cable. The hole closer to the power socket controls the cable compensation the other controls the video level.
	WARNING! Do not use the trimmers except in cases where the cable losses result in poor resolution of detail or when the whole signal level crashes.
	Once they have been touched, the accurate signal transparencies that have been fine-tuned in the factory are lost. To readjust to the original signal status you need a stable signal generator and a good quality signal analyzer.
Noise bars are "rolling" up or down in the output image or: Low frequency hum in the output signal	Hum bars (ground loop) are caused by a difference in the ground potential of any two or more devices connected to your signal path. This difference is compensated by passing that voltage difference through any available interconnection, including your video cables.
	WARNING! Do not disconnect the ground from any piece of video equipment in your signal path!
	Check the following to remove hum bars:
	• Confirm that all interconnected equipment is connected to the same phase of power, if possible.
	• Remove equipment connected to that phase that may introduce noise, such as motors, generators, etc.
	• Disconnect all interconnect cables and reconnect them one at a time until ground loop reappears. Disconnect the affected cable and replace, or insert an isolation transformer in the signal path.

9.3 Audio Signal

Problem	Remedy
No audio at the output device, regardless of input selected	1. Confirm that your sources and output device are powered on and connected properly. Audio signals connected to the input of your switcher should be properly wired to the output of your source. Audio signals connected to output of your switcher should be properly wired to the input of your switcher or recorder. 2. Confirm that any other switchers in the signal path have the proper input and/or output selected. Pay special attention to input switchers that may be built into your switcher or recording device.
Audio level is too low	1. Confirm that the connecting cables are of high quality and properly built. Take special care in noting the wiring configuration of balanced to unbalanced cables. 2. Check level controls located on your source input device or output display or recorder.
The switcher switches the video but does not switch the audio.	One of the audio cables leading to the main board is disconnected and cannot transfer the switch command to the video.
The switcher will not switch via the RS-485 control	The RS-485 control is fed by a flat-cable from the upper audio board to a socket on the main board. One of its connectors may be disconnected. Turn OFF the mains switch, remove the power cord from the mains socket and carefully remove the cover of the switcher. Verify that all the flat cables from the main board to the control board, from the audio board to the main board and from the switchboard to the main board are undamaged and properly connected. **NOTE:** Sometimes connectors work loose and have to be reinserted. (Perform this firmly but with care).

9.4 Control

Problem	Remedy
No control of switcher	1. Confirm that the connecting cable is wired for pins 1-9 straight through. 2. Confirm that all dipswitches on the switcher have been set properly. Keep in mind that if you are only controlling one switcher on a specific port, that switcher must be assigned the ID of "1". 3. If controlling more than one switcher on a single port, all switchers must be of the same type and power to all switchers must be on.
No control of switcher from PC software	1. Confirm the wiring of the connecting cable. Cable length should not exceed 25 feet. 2. Confirm that all dipswitches on the switcher have been set properly. Keep in mind that if you are only controlling one switcher on a specific port, that switcher must be assigned the ID of "1". 3. If controlling more than one switcher on a single port, all switchers must be of the same type and power to all switchers must be on. 4. Confirm that the baud rate of your computer COM port is set to the same as that of your switcher (9600-Baud). Confirm that the proper COM port is selected in the control software. 5. Confirm that bi-directional communication is enabled on all switchers. 6. With custom software, do not send multiple commands at the same time. The switcher must complete one command before receiving another. 7. Confirm that the computer you are using supports true RS-232C protocol. Computers, such as the Apple Macintosh do not!

9.5 Software

Problem	Remedy
Software version is not updated	Carefully remove the switcher cover and identify the EPROM chip that is located in the middle of the main board, marked by a white sticker. Remove the chip with the proper tools and insert the new EPROM carefully, observing proper polarity.

9.6 Switching Malfunctions

Problem	Remedy
The switcher succeeds in switching a number of sources then fails to switch one	Malfunction in the particular source or cable assembly. **NOTE:** The most common failure mode in transferring the signal of an audio source is a break in the connecting wire. Disconnect the source from a channel that is switching successfully and connect the suspect source to it. If the channel continues to switch successfully, then there is something wrong with the switcher or the suspect source was not connected properly. If it does not continue to switch successfully, then there is something wrong with the source or cable assembly. Check them.
The switcher turns ON but will not switch at all	One of the two flat cables leading from the main board to the control board may be disconnected and the switch command is not being transferred to the switcher.

9.7 Vertical Interval

Problem	Remedy
The switcher is switching, but there are transitional effects when using genlocked sources. The picture jumps and rolls, and the color is lost until the acceptor (a VCR, for example) has readjusted itself to the new color information	There is no vertical interval Sync source for switching. It should be available either on video input #1 or on an external genlocked source as a live video or a live black burst signal. Which one, will depend on certain jumper settings. Turn OFF the power switch, remove the power cable from the mains socket and carefully remove the cover of the switcher. Carefully remove the audio board by unscrewing the four upper board screws. The upper board can now be raised with ease. Find jumper J20 (also J34 in an interconnected configuration) and set up the Sync source in accordance section 6.3.

10 Protocol Used for OMX-SW6x1B Communication

The protocol used for communication between the PC and the Master
OMX-SW6x1B is defined as follows:

MSB							LSB
N7	N6	N5	N4	N3	N2	N1	N0

Where:

- N7 is used for communication between the Slave and the Master only
  and is always 0 for communication with the PC.
- N6N5N4 is the binary value of the Machine we are addressing minus
  one, e.g., if we wish to address the Master (Machine 1 by definition),
  then N6N5N4 = 000, if we wish to address Machine 6, then N6N5N4 =
  101.
- N3N2N1N0 is the binary value of the input to be selected, i.e.
  N3N2N1N0 = 0111 is equivalent to pressing switch 7 on the front panel.

Several special codes are also valid:

- N3N2N1N0 = 1101 requests that the Machine being addressed sends its
  present status to the PC, i.e. which input is selected on its front panel.
- N3N2N1N0 = 1110 is an "OK" handshake, i.e. confirmation that the
  instruction was received by the addressed Machine. (If the addressed
  Machine is not present, then this confirmation is not sent to the PC).

Information sent from the Master to the PC is done using the same format, for
example:

0	Machine Number -1	New Switch Status
N7	N6N5N4	N3N2N1N0

The rate of data transfer is always 9600 baud, with no parity, 8 data bits and 1
stop bit.