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## **SMC-9901 User Guide**

# Thank You for Choosing Ross

You've made a great choice. We expect you will be very happy with your purchase of Ross Technology. Our mission is to:

1. Provide a Superior Customer Experience
  - offer the best product quality and support
2. Make Cool Practical Technology
  - develop great products that customers love

Ross has become well known for the Ross Video Code of Ethics. It guides our interactions and empowers our employees. I hope you enjoy reading it below.

If anything at all with your Ross experience does not live up to your expectations be sure to reach out to us at [solutions@rossvideo.com](mailto:solutions@rossvideo.com).



David Ross  
CEO, Ross Video  
[dross@rossvideo.com](mailto:dross@rossvideo.com)

## Ross Video Code of Ethics

Any company is the sum total of the people that make things happen. At Ross, our employees are a special group. Our employees truly care about doing a great job and delivering a high quality customer experience every day. This code of ethics hangs on the wall of all Ross Video locations to guide our behavior:

1. We will always act in our customers' best interest.
2. We will do our best to understand our customers' requirements.
3. We will not ship crap.
4. We will be great to work with.
5. We will do something extra for our customers, as an apology, when something big goes wrong and it's our fault.
6. We will keep our promises.
7. We will treat the competition with respect.
8. We will cooperate with and help other friendly companies.
9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

# SMC-9901 · User Guide

- Ross Part Number: **9901DR-004-04**
- Release Date: May 2, 2018.

The information contained in this manual is subject to change without notice or obligation.

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## Patents

Patent numbers US 7,034,886; US 7,508,455; US 7,602,446; US 7,802,802 B2; US 7,834,886; US 7,914,332; US 8,307,284; US 8,407,374 B2; US 8,499,019 B2; US 8,519,949 B2; US 8,743,292 B2; GB 2,419,119 B; GB 2,447,380 B; and other patents pending.

## Notice

The material in this manual is furnished for informational use only. It is subject to change without notice and should not be construed as commitment by Ross Video Limited. Ross Video Limited assumes no responsibility or liability for errors or inaccuracies that may appear in this manual.

## Statement of Compliance

This product has been determined to be compliant with the applicable standards, regulations, and directives for the countries where the product is marketed.

Compliance documentation, such as certification or Declaration of Compliance for the product is available upon request by contacting [techsupport@rossvideo.com](mailto:techsupport@rossvideo.com). Please include the product; model number identifiers and serial number and country that compliance information is needed in request.

## EMC Notices

### United States of America - FCC Part 15

This equipment has been tested and found to comply with the limits for a class A Digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a Commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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**Notice** — *Changes or modifications to this equipment not expressly approved by Ross Video Ltd. could void the user's authority to operate this equipment.*

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### Canada

This Class A device complies with Canadian ICES-003 and part 15 of the FCC Rules.

Cet appareil numérique de la classe "A" est conforme à la norme NMB-003 du Canada.

## European Union

This equipment is in compliance with the essential requirements and other relevant provisions established under regulation (EC) No 765/2008 and Decision No 768/2008/EC referred to as the “New Legislative Framework”.



**Warning** — *This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.*

## Australia/New Zealand

This equipment is in compliance with the provisions established under the Radiocommunications Act 1992 and Radiocommunications Labelling (Electromagnetic Compatibility) Notice 2008.

## Korea

This equipment is in compliance with the provisions established under the Radio Waves Act.

## International

This equipment has been tested under the requirements of CISPR 22:2008 or CISPR 32:2015 and found to comply with the limits for a Class A Digital device.

**Notice** — *This is a Class A product. In domestic environments, this product may cause radio interference, in which case the user may have to take adequate measures.*

## Maintenance/User Serviceable Parts

Routine maintenance to this GearLite product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the “Contact Us” section on the last page of this manual. All GearLite products are covered by a generous 3-year warranty and will be repaired without charge for materials or labor within this period. See the “Warranty and Repair Policy” section in this manual for details.

## Environmental Information

The equipment may contain hazardous substances that could impact health and the environment.

To avoid the potential release of those substances into the environment and to diminish the need for the extraction of natural resources, Ross Video encourages you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials from your end-of-life equipment in an environmentally friendly and health conscious manner.

The crossed-out wheeled bin symbol invites you to use these systems.



If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration. You can also contact Ross Video for more information on the environmental performances of our products.

## Company Address

**Ross Video Limited**

8 John Street  
Iroquois, Ontario  
Canada, K0E 1K0

**Ross Video Incorporated**

P.O. Box 880  
Ogdensburg, New York  
USA 13669-0880

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General Business Office: (+1) 613 • 652 • 4886

Fax: (+1) 613 • 652 • 4425

Technical Support: (+1) 613 • 652 • 4886

After Hours Emergency: (+1) 613 • 349 • 0006

E-mail (Technical Support): [techsupport@rossvideo.com](mailto:techsupport@rossvideo.com)

E-mail (General Information): [solutions@rossvideo.com](mailto:solutions@rossvideo.com)

Website: <http://www.rossvideo.com>



# Introduction

This guide covers the installation, configuration, and use of the SMC-9901. The following chapters are included:

- “**Introduction**” summarizes the guide and provides important terms, and conventions.
- “**Hardware Overview**” describes the SMC-9901 hardware features and physical connections.
- “**Physical Installation**” provides instructions for the basic physical installation of the SMC-9901 in your system.
- “**Cabling**” provides an overview of connecting external devices to the SMC-9901.
- “**Warranty and Repair**” provides information on the warranty and repair policy for your SMC-9901.
- “**Technical Specifications**” provides the technical specifications for your SMC-9901.

## Documentation Conventions

Special text formats are used in this guide to identify parts of the user interface, text that a user must enter, or a sequence of menus and sub-menus that must be followed to reach a particular command.

### Interface Elements

Bold text is used to identify a user interface element such as a dialog box, menu item, or button. For example:

In the **Edit** dialog, click **Apply**.

### User Entered Text

Courier text is used to identify text that a user must enter. For example:

In the **Language** box, enter **English**.

### Referenced Guides

Italic text is used to identify the titles of referenced guides, manuals, or documents. For example:

For more information, refer to the ***DAC-9516 User Manual***.

### Menu Sequences

Menu arrows are used in procedures to identify a sequence of menu items that you must follow. For example, if a step reads “**File > Save As**,” you would select the **File** menu and then select **Save As**.

### Important Instructions

Star icons are used to identify important instructions or features. For example:

- ★ Contact your IT department before connecting to your facility network to ensure that there are no conflicts. They will provide you with an appropriate value for the IP Address, Subnet Mask, and Gateway for your SMC-9901.

## Contacting Technical Support

At Ross Video, we take pride in the quality of our products, but if problems occur, help is as close as the nearest telephone.

Our 24-hour Hot Line service ensures you have access to technical expertise around the clock. After-sales service and technical support is provided directly by Ross Video personnel. During business hours (Eastern Time), technical support personnel are available by telephone. After hours and on weekends, a direct emergency technical support phone line is available. If the technical support person who is on call does not answer this line immediately,

a voice message can be left and the call will be returned shortly. This team of highly trained staff is available to react to any problem and to do whatever is necessary to ensure customer satisfaction.

- **Technical Support:** (+1) 613-652-4886
- **After Hours Emergency:** (+1) 613-349-0006
- **E-mail:** [techsupport@rossvideo.com](mailto:techsupport@rossvideo.com)
- **Website:** <http://www.rossvideo.com>



# Before You Begin

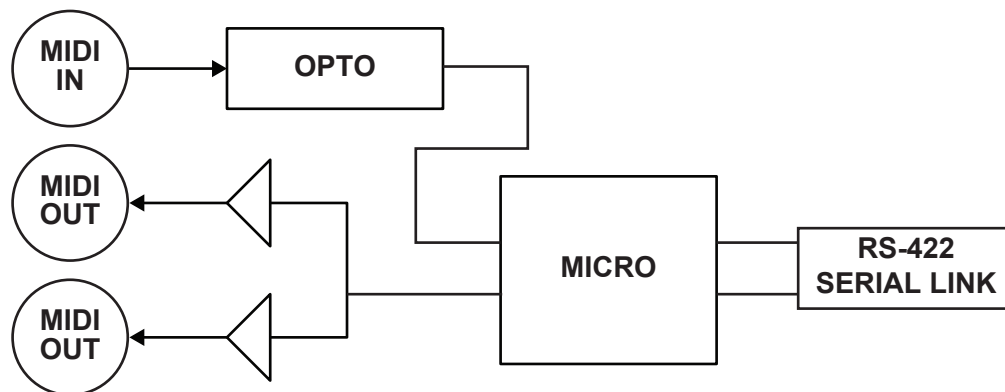
If you have questions pertaining to the operation of SMC-9901, contact us at the numbers listed in the section “**Contacting Technical Support**” on page 7. Our technical staff is always available for consultation, training, or service.

## Overview

The SMC-9901 Serial to MIDI Converter is a high-quality signal conversion solution within the family of GearLite compact, self-contained modular products. Supporting RS-422 Serial to MIDI conversion, the SMC-9901 is the ideal converter for communicating with a MIDI-enabled Audio Mixer from a Ross Video Synergy or Vision switcher.

A universal power adapter and line cord, suitable for the country of use, is supplied with each module. Various mounting options are included that enable a wide range of installation choices.

## Block Diagram



*Figure 2.1 Simplified Block Diagram of SMC-9901 Functions*

## Features

Some features of the SMC-9901 include:

- 1 RS-422 Serial input
- 1 MIDI input
- 2 MIDI outputs
- Power, Serial Rx, Serial Tx, MIDI In Status, and MIDI Out Status indicator LEDs
- Small brick form factor
- 5V universal adapter with locking DC connector
- 3-year warranty



# Hardware Overview

This chapter presents information on the SMC-9901 hardware components and features.

## Chassis Faceplate Overview

The chassis faceplate of the SMC-9901 provides a silk-screen map of the connections available. **Figure 3.1** illustrates the SMC-9901 faceplate label.

The chassis of the SMC-9901 also includes status LEDs that display the status of power, MIDI input or output activity, as well as RS-422 serial.

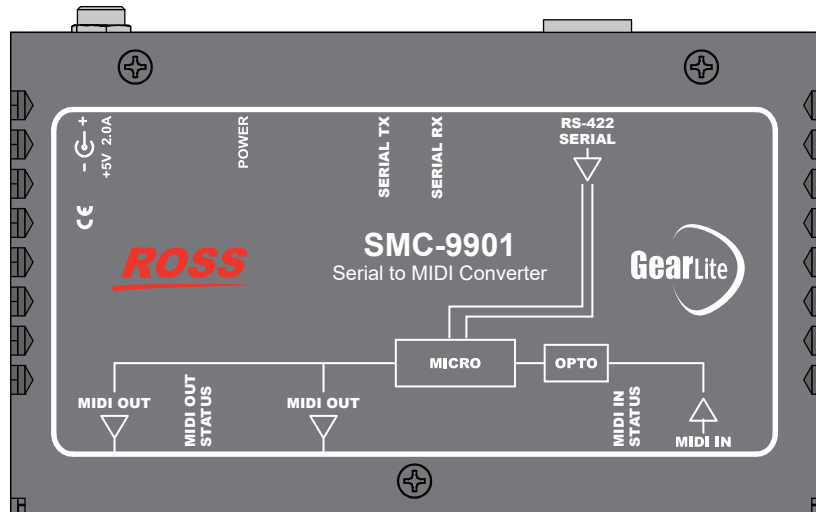


Figure 3.1 SMC-9901 — Faceplate Label

## POWER Connection

The SMC-9901 has a standard miniature power jack (center pin positive) that connects to the PS-9000 power supply. (Figure 3.2)

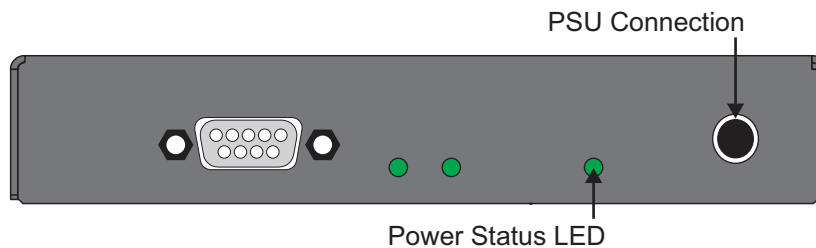


Figure 3.2 SMC-9901 — POWER

### For More Information on...

- connecting to the PS-9000, refer to the section “Power Adapter and Supply” on page 20.

## Power Status LED

Table 3.1 describes the behavior the Power LED.

**Table 3.1 Power Status LED**

| Status | Description                                                                      |
|--------|----------------------------------------------------------------------------------|
| Green  | When this LED is <i>continually lit</i> green, power is supplied to the SMC-9901 |
| Off    |                                                                                  |

## RS-422 Connection

The SMC-9901 provides a single DB-9 connector for 38,400 baud serial RS-422 communication. Serial Tx and Rx Status LEDs next to the ports show activity status. (Figure 3.3)

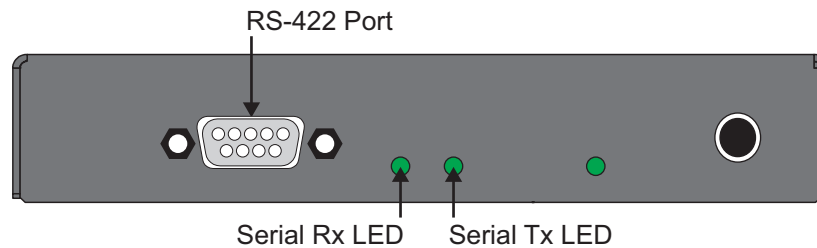


Figure 3.3 SMC-9901 — RS-422

### For More Information on...

- the port pinouts, refer to the section “RS-422 Pinouts” on page 23.

## Serial Status LEDs

Table 3.2 describes the behavior of the Serial Rx and Serial Tx LEDs.

**Table 3.2 Serial Status LEDs**

| Status           | Description                                                                                 |
|------------------|---------------------------------------------------------------------------------------------|
| <b>Serial Rx</b> |                                                                                             |
| Green            | When lit, this LED indicates that RS-422 serial communication signals are being received    |
| <b>Serial Tx</b> |                                                                                             |
| Yellow           | When lit, this LED indicates that RS-422 serial communication signals are being transmitted |

## MIDI Connections

The SMC-9901 provides a 5-pin DIN connector for MIDI in, and two 5-pin DIN connectors for MIDI out. MIDI In and MIDI Out Status LEDs next to the ports show activity status. (Figure 3.4)

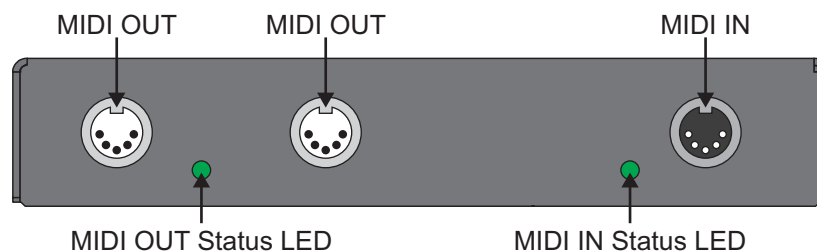


Figure 3.4 SMC-9901 — MIDI Connections

**For More Information on...**

- connecting the MIDI signals, refer to the section “**Connecting an Audio Mixer to a Ross Video Switcher**” on page 19.

## MIDI Status LEDs

**Table 3.3** describes the behavior of the MIDI Status LEDs.

***Table 3.3 MIDI Status LEDs***

| Status          |  | Description                                                                  |
|-----------------|--|------------------------------------------------------------------------------|
| <b>MIDI OUT</b> |  |                                                                              |
| Yellow          |  | When lit, this LED indicates that MIDI communication signals are transmitted |
| <b>MIDI IN</b>  |  |                                                                              |
| Green           |  | When lit, this LED indicates that MIDI communication signals are received    |



# Physical Installation

If you have questions pertaining to the installation of SMC-9901, please contact us at the numbers listed in the section “**Contacting Technical Support**” on page 7. Our technical staff is always available for consultation, training, or service.

## For More Information on...

- the technical specifications for the SMC-9901, refer to the chapter “**Technical Specifications**” on page 23.

## Static Discharge

Throughout this chapter, please heed the following cautionary note:



**ESD Susceptibility** — *Static discharge can cause serious damage to sensitive semiconductor devices. Avoid handling circuit boards in high static environments such as carpeted areas and when synthetic fiber clothing is worn. Always exercise proper grounding precautions when working on circuit boards and related equipment.*

## Mounting and Installation

The SMC-9901 can be mounted in any convenient location. However, to ensure long life for this product, observe the following precautions and operating requirements:

- Maintain an ambient temperature of 20° to 40°C (68°F – 104°F).
- Allow for air circulation around the chassis for convectional cooling.

Many different mounting positions are possible with the included mounting hardware. Some installation options are permanent and require careful consideration of the final positioning before installation.

★ In some mounting locations, the power adapter must be affixed in a similar manner as the chassis.

Other possible options include the use of adhesive magnetic sheets (not included) affixed to the chassis and the power adapter, for removable mounting on metal cabinets etc.

Cable ties may be necessary in some applications to relieve strain on the mounting hardware and the connectors.

## Surface Mount Strips

The included VELCRO® brand surface mount strips allow the GearLite module and power supply to be affixed to a permanent location during use and easily removed for adjustments. Carefully consider the installation location before proceeding; the adhesive is very aggressive and is not easily removed. The adhesive will cure fully in 24 hours.

### To install the Surface Mount Strips

1. Remove the **Protective Backing Film** from the adhesive on the bottom of the two VELCRO® brand **Surface Mount Strips**.
- ★ A third VELCRO® brand **Surface Mount Strip** is available to mount the power adapter.
2. Adhere the **Surface Mount Strips** to the bottom side of the chassis **Figure 4.1**.

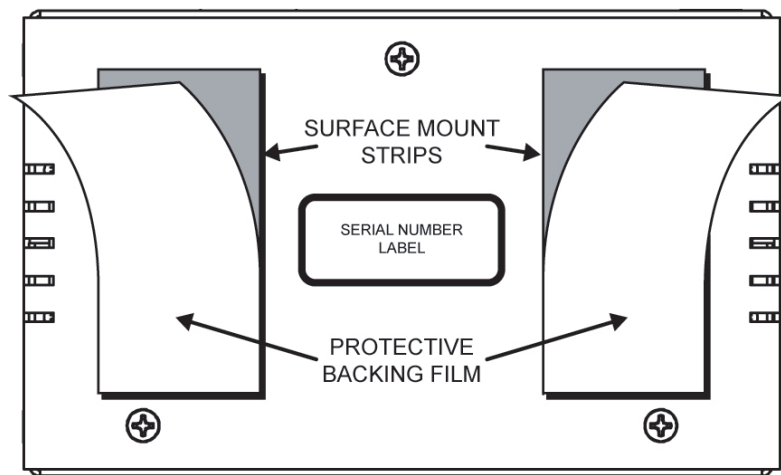


Figure 4.1 Surface Mount Installation Option

3. Remove the **Protective Backing Film** from the other side of the VELCRO® brand **Surface Mount Strips**.
4. Press the chassis into position on the surface you want to mount it to.

## Flat Metal Plate

Use the flat metal plate for permanent mounting to a rack, a desk, or any other location where bolts or screws can be applied. Be sure to position the module to allow for operator adjustments, if required.

★ Mounting screws are not provided by Ross Video.

### To install the Flat Metal Plate

1. Remove the **2** screws from the bottom of the chassis.
2. Install the **Flat Metal Plate** onto the bottom of the chassis **Figure 4.2** using the screws removed in **Step 1**.

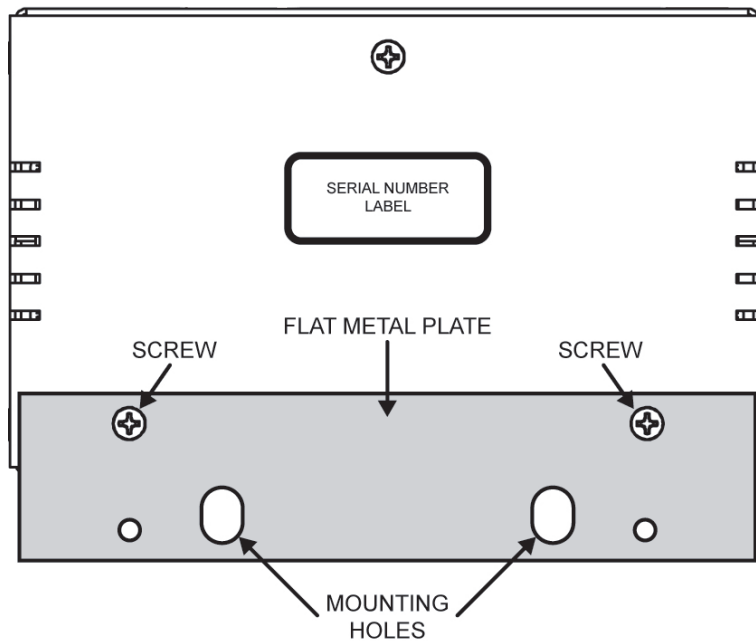


Figure 4.2 Flat Metal Plate Installation Option

3. Install the chassis in the desired location using the **Mounting Holes** on the **Flat Metal Plate**.



## Non-Slip Pads

Four non-slip adhesive pads have been supplied for desktop placements. Simply remove the protective backing film from the adhesive and affix one non-slip pad to each of the four corners on the bottom of the chassis.

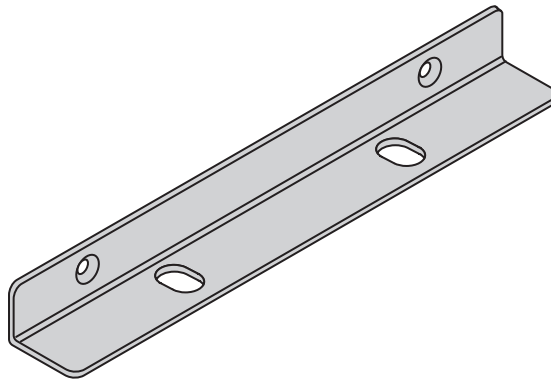
## Optional Mounting Accessories

Ross Video is committed to providing practical solutions for the needs of your high-quality broadcast facility. The following products may be ordered separately to expand your installation options.

### BPM-9000

The BPM-9000 Angle Mounting Bracket (**Figure 4.3**) allows a single GearLite module to be installed in positions not possible with the flat metal plate. The bracket has a 90° angle.

★ Mounting screws are not provided by Ross Video.



*Figure 4.3 BPM-9000 90° Mounting Bracket*



# Cabling

This chapter provides information on connecting the SMC-9901 to external devices.

★ It is not necessary to terminate unused outputs.

## Connecting an Audio Mixer to a Ross Video Switcher

The SMC-9901 can be used to allow control of an Audio Mixer from a Ross Video switcher.

★ The **Serial Interface Cable** and **MIDI Cables** are not provided by Ross Video.

### For More Information on...

- setting up your Ross Video switcher to work with the SMC-9901, refer to the *Ross Video External Device Setup Sheet* for your particular device.

### To connect an audio mixer to a Ross Video switcher using a SMC-9901

1. Connect and secure the **9-Pin, Male**, end of the **Interface Cable** to the **RS-422 Serial** port on the SMC-9901 **Figure 5.1**.

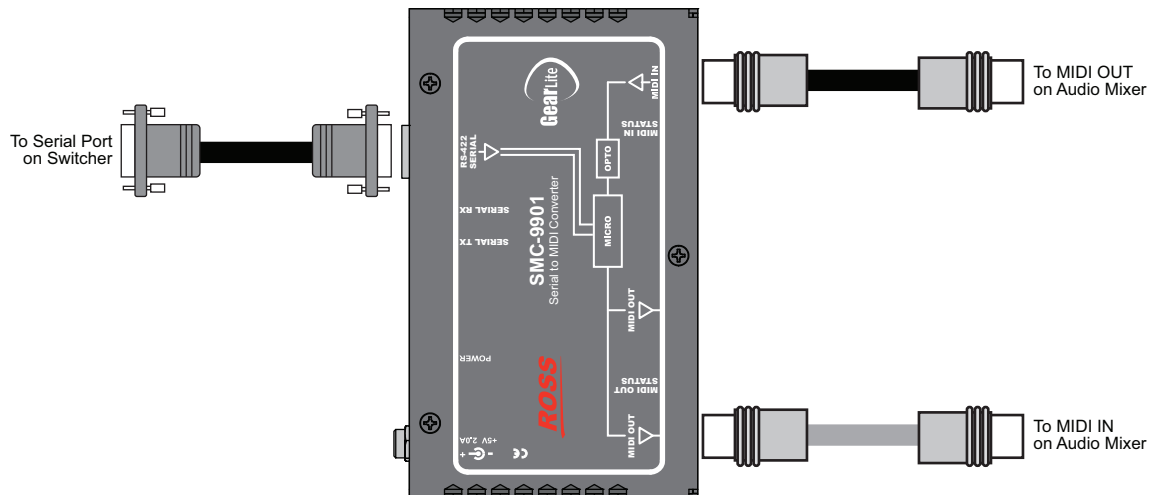


Figure 5.1 Audio Mixer to a Ross Video Switcher using the SMC-9901

2. Install the first **MIDI Cable** connecting the SMC-9901 to the **Audio Mixer** as follows:
  - a. Connect one end of a **MIDI Cable** to one of the **MIDI OUT** ports on the SMC-9901.
  - b. Connect the other end of the **MIDI Cable** to the **MIDI IN** port on the **Audio Mixer**.
3. Install the second **MIDI Cable** connecting the SMC-9901 to the **Audio Mixer** as follows:
  - a. Connect one end of a **MIDI Cable** to the **MIDI IN** port on the SMC-9901.
  - b. Connect the other end of the **MIDI Cable** to the **MIDI OUT** port on the **Audio Mixer**.

★ If you are connecting two audio mixers to the SMC-9901, a MIDI Signal-Merging Device must be used to combine the two MIDI Outputs from the audio mixers to the single MIDI IN on the SMC-9901.

## Connecting to Other External Devices

Connect the RS-422 serial, MIDI in, and MIDI out cables to the SMC-9901 according to the designations indicated on the chassis label (“**Chassis Faceplate Overview**” on page 11).

★ It is not necessary to terminate unused outputs.

## Power Adapter and Supply

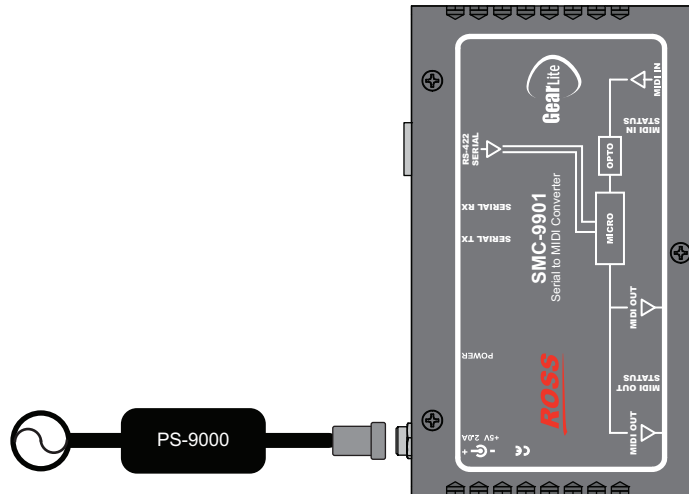
Connect the PS-9000 power adapter to the power supply connector. The PS-9000 provides regulated +5V DC (5%) @ up to 2A. The DC power cord has a locking connector that securely fastens into the power supply DC jack on the SMC-9901. The SMC-9901 has a standard miniature power jack (center pin positive).



**Caution** — Use of improper adapters may damage the SMC-9901 and will void the warranty.

### To connect the SMC-9901 to the PS-9000

1. Connect the female end of the provided PS-9000 cable into the socket marked **POWER** on the SMC-9901 chassis.



**Note:** It is recommended that you always connect the PS-9000 to the SMC-9901 before connecting to Mains Power.

*Figure 5.2 SMC-9901 — Power Connection*

2. Connect the PS-9000 to Mains Power.

# Warranty and Repair

The SMC-9901 is warranted to be free of any defect with respect to performance, quality, reliability, and workmanship for a period of **THREE (3)** years from the date of delivery to the customer. In the event that your RossGear SMC-9901 proves to be defective in any way during this warranty period, Ross Video Limited reserves the right to repair or replace this piece of equipment with a unit of equal or superior performance characteristics.

Should you find that this SMC-9901 has failed after your warranty period has expired, we will repair your defective product should suitable replacement components be available. You, the owner, will bear any labor and/or part costs incurred in the repair or refurbishment of said equipment beyond the **THREE (3)** year warranty period.

In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profits) incurred by the use of this product. Implied warranties are expressly limited to the duration of this warranty.

This SMC-9901 User Manual provides all pertinent information for the safe installation and operation of your RossGear Product. Ross Video policy dictates that all repairs to the SMC-9901 are to be conducted only by an authorized Ross Video Limited factory representative. Therefore, any unauthorized attempt to repair this product, by anyone other than an authorized Ross Video Limited factory representative, will automatically void the warranty. Please contact Ross Video Technical Support for more information.

## In Case of Problems

Should any problem arise with your SMC-9901, please contact the Ross Video Technical Support Department. (Contact information is supplied at the end of this publication.)

A Return Material Authorization number (RMA) will be issued to you, as well as specific shipping instructions, should you wish our factory to repair your SMC-9901. If required, a temporary replacement module will be made available at a nominal charge. Any shipping costs incurred will be the responsibility of you, the customer. All products shipped to you from Ross Video Limited will be shipped collect.

The Ross Video Technical Support Department will continue to provide advice on any product manufactured by Ross Video Limited, beyond the warranty period without charge, for the life of the equipment.



# Technical Specifications

This chapter provides technical information for SMC-9901.

★ Specifications are subject to change without notice.

## RS-422 Port

**Table 7.1 Technical Specifications — RS-422 Port**

| Item                  | Specifications |
|-----------------------|----------------|
| Transmission Standard | RS-422         |
| Baud Rate (fixed)     | 38,400 bps     |

## RS-422 Pinouts

**Table 7.2** provides the pinouts for the **RS-422 Serial** port.

**Table 7.2 RS-422 Serial Port**

| Pin | RS-422    |
|-----|-----------|
| 1   | n/c       |
| 2   | TxA (Tx-) |
| 3   | RxB (Rx+) |
| 4   | Ground    |
| 5   | Ground    |
| 6   | n/c       |
| 7   | TxB (Tx+) |
| 8   | RxA (Rx-) |
| 9   | n/c       |

## MIDI Port

**Table 7.3 Technical Specifications — MIDI**

| Item                      | Specifications |
|---------------------------|----------------|
| MIDI Input Specification  | MIDI 1.0       |
| MIDI Output Specification | MIDI 1.0       |

## Power

**Table 7.4 Technical Specifications — Power**

| Item                | Specifications         |
|---------------------|------------------------|
| Required Voltage    | +5V DC (5% regulation) |
| Current Consumption | < 200mA typical        |
| Total Power         | 1W typical             |

## Environment

**Table 7.5 Technical Specifications — Environment**

| Item                        | Specifications                                     |
|-----------------------------|----------------------------------------------------|
| Maximum Ambient Temperature | 20°C – 40°C (68°F – 104°F) ambient, non-condensing |

## Dimensions

**Table 7.6 Technical Specifications — Dimensions**

| Item                | Specifications                      |
|---------------------|-------------------------------------|
| Physical Dimensions | 13cm x 8.5cm x 3cm (5" x 3.5" x 1") |
| Weight              | 340g (12oz)                         |