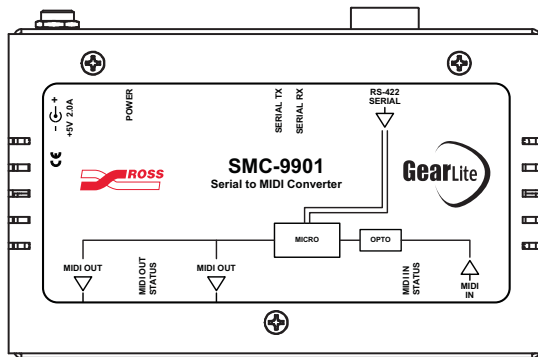**Ross Video Limited**

GearLite

SMC-9901
Serial to MIDI Converter
User Manual

ROSS
Live Production Technology™

SMC-9901 • Serial to MIDI Converter User Manual

- Ross Part Number: **9901DR-004**
- Document Issue: **1**
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Important Regulatory and Safety Notices to Service Personnel

Before using this product and any associated equipment, refer to the "**Important Safety Instructions**" listed below to avoid personnel injury and to prevent product damage.

Product may require specific equipment, and/or installation procedures to be carried out to satisfy certain regulatory compliance requirements. Notices have been included in this publication to call attention to these specific requirements.

Symbol Meanings

Protective Earth — *This symbol identifies a Protective Earth (PE) terminal, which is provided for connection of the supply system's protective earth (green or green/yellow) conductor.*

This symbol on the equipment refers you to important operating and maintenance (servicing) instructions within the Product Manual Documentation. Failure to heed this information may present a major risk of damage or injury to persons or equipment.

Warning — *The symbol with the word "**Warning**" within the equipment manual indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.*

Caution — *The symbol with the word "**Caution**" within the equipment manual indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.*

Warning Hazardous Voltages — *This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product enclosure that may be of sufficient magnitude to constitute a risk of shock to persons.*

ESD Susceptibility — *This symbol is used to alert the user that an electrical or electronic device or assembly is susceptible to damage from an ESD event.*

Important Safety Instructions

1. **Warning** – Read these instructions.
2. Keep these instructions.
3. Heed all warnings.

4. Follow all instructions.

5. The safe operation of this product requires that a protective earth connection be provided. A grounding conductor in the equipment's supply cord provides this protective earth. To reduce the risk of electrical shock to the operator and service personnel, this ground conductor must be connected to an earthed ground.

6. Do not defeat the safety purpose of the grounding-type plug. A grounding type plug has two blades and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit in to your outlet, consult an electrician for replacement of the obsolete outlet. Protect the power cord from being walked on or pinching particularly at plugs, convenience receptacles, and point where they exit from the apparatus.

7. **Warning** – **Indoor Use: WARNING:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

8. Do not block ventilation openings. Install in accordance with manufacturer's instructions.

9. Do not install near heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

10. Do not use this apparatus near water.

11. Only use attachments/accessories specified by the manufacturer.

12. Unplug this apparatus during lightning storms or when unused for long periods of time.

13. Clean only with a dry cloth.

14. To avoid electrical shock, disconnect the A/C power cord before any servicing.

15. Refer all servicing to qualified personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug damage, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

EMC Notices

Unites 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.

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

CANADA

This Class "A" digital apparatus complies with Canadian ICES-003.

Cet appariel numerique de la classe "A" est conforme a la norme NMB-003 du Canada.

EUROPE

This equipment is in compliance with the essential requirements and other relevant provisions of **CE Directive 93/68/EEC**.

INTERNATIONAL

This equipment has been tested to **CISPR 22:1997** along with amendments **A1:2000** and **A2:2002**, 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 RossGear 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 that you purchased required the extraction and use of natural resources for its production. It 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.
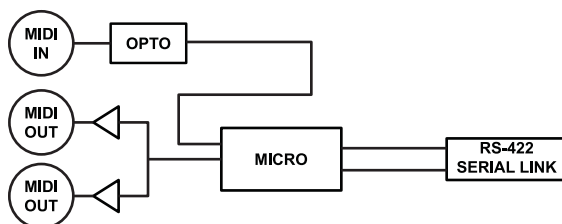
Introduction

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.

The SMC-9901 provides a single DB-9 connector for 38,400 baud serial RS-422 communication, one 5-pin DIN connector for MIDI in, and two 5-pin DIN connectors for MIDI out. Power, Serial Tx and Rx, MIDI In and MIDI Out Status LEDs next to the ports show activity status.

A universal power adaptor 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.

Functional Block Diagram

Figure 1 *Simplified Block Diagram of SMC-9901 Functions*

Features

The SMC-9901 Serial to MIDI Converter has the following features:

- 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

Installation

Static Discharge

Whenever handling the SMC-9901 Serial to MIDI Converter and other related equipment, please observe all static discharge precautions as described in the following 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 wearing synthetic fiber clothing. Always exercise proper grounding precautions when working on circuit boards and related equipment.*

Unpacking

Unpack each SMC-9901 module you received from the shipping container and check the contents against the packing list to ensure that all items are included. If any items are missing or damaged, contact your sales representative or Ross Video directly.

Mounting and Installation

The SMC-9901 Serial to MIDI Converter 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.
- 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. Please note that in some mounting locations, the power adaptor 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 adaptor, 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.
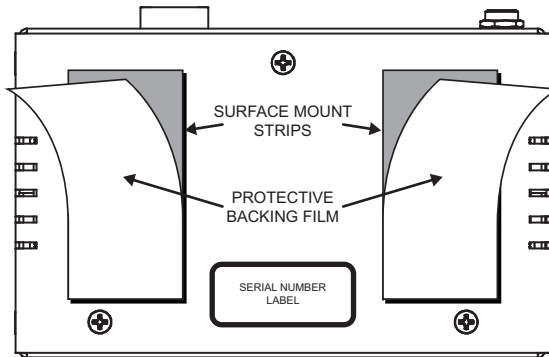
Surface Mount Strips

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.

Installing the Surface Mount Strips

Use the following procedure 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**.

2. Adhere the **Surface Mount Strips** to the bottom side of the chassis (**Figure 2**).

Figure 2 *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.

> ✓ **Operating Tip** — *An additional VELCRO® brand **Surface Mount Strip** is available to mount the power adapter.*

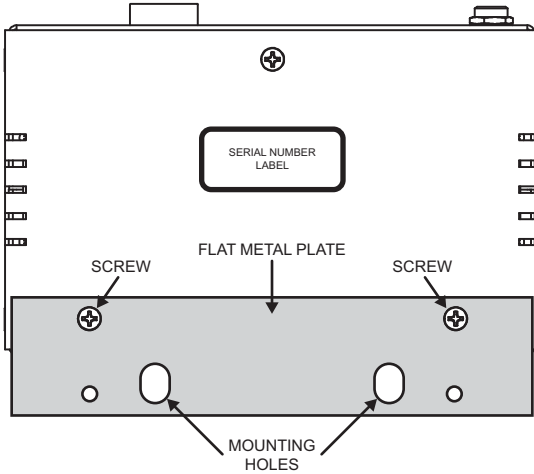This completes the procedure for installing the surface mount strips.

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.

Installing the Flat Metal Plate

Use the following procedure 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 3**) using the screws removed in **Step** (**1.**).

Figure 3 *Flat Metal Plate Installation Option*

3. Install the chassis in the desired location using the **Mounting Holes** on the **Flat Metal Plate**. Mounting screws are not provided by Ross Video.

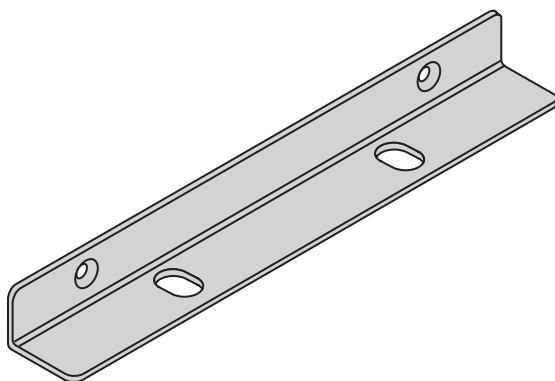This completes the procedure for installing the flat metal plate.

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**) 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.
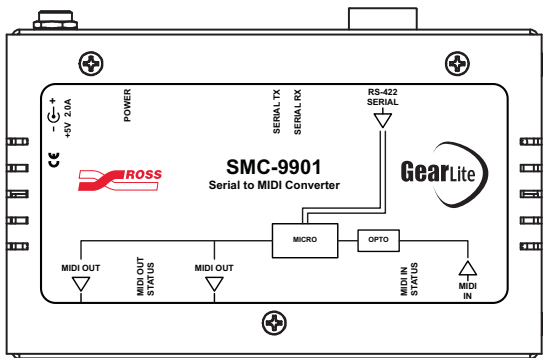

Figure 4 *BPM-9000 90° Mounting Bracket*

Setup and Operation

Cable Connections

Connect the RS-422 serial, MIDI in, and MIDI out cables to the SMC-9901 according to the designations indicated on the chassis label (**Figure 5**). It is not necessary to terminate unused outputs.

Figure 5 *SMC-9901 Cable Connections Indicator Label*

The pinouts for the **RS-422 Serial** port is listed in the following table (**Table 1**).

Table 1 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

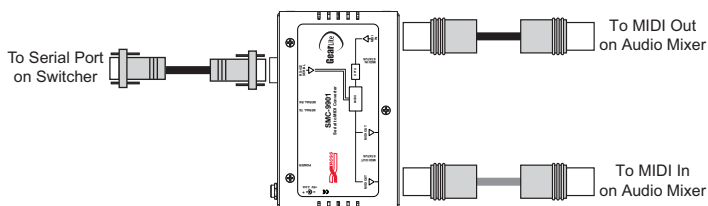### *Connecting an Audio Mixer to a Ross Video Switcher*

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

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

Refer to the Ross Video External Device Setup Sheet for your particular device for information on setting up your Ross Video switcher to work with the SMC-9901.

Use the following procedure 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 6**).

Figure 6 *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:

   - Connect one end of a **MIDI Cable** to one of the **MIDI OUT** ports on the SMC-9901.

   - 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:

   - Connect one end of a **MIDI Cable** to the **MIDI IN** port on the SMC-9901.

   - Connect the other end of the **MIDI Cable** to the **MIDI OUT** port on the **Audio Mixer**.

> **Note** — *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.*

This completes the procedure for connecting an audio mixer to a Ross Video switcher using an SMC-9901.

Power Adapter and Supply

Connect the PS-9000 power adaptor 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). If using an adaptor other than the PS-9000, ensure that the polarity is correct and that the voltage is +5V DC regulated to 5% and it can supply sufficient current for the SMC-9901. Use of improper adaptors may damage the SMC-9901 and will void the warranty.

Installations outside of North America using line voltages of 200 - 240 Volts require a plug, certified for the country of use, to be installed on the supplied line cord.

See the **Important Regulatory and Safety Notices** section at the front of this manual for details.

If using an adaptor other than the PS-9000, ensure that:

- the polarity is correct
- the voltage is +5V DC regulated to 5%
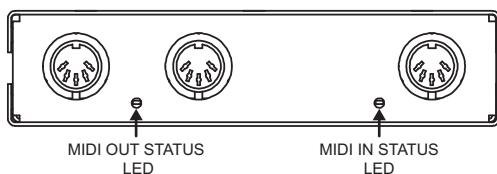- sufficient current for the ADC-9033 is supplied

⚠ **Caution** — *Use of improper adaptors may damage the SMC-9901 and will void the warranty.*
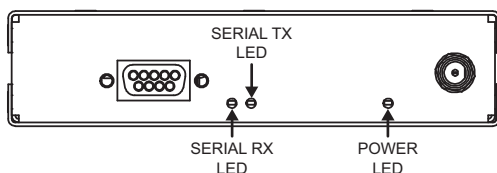
User Controls

The SMC-9901 has status indicator LEDs on the front edge (**Figure 7**) and rear edge (**Figure 8**) of the chassis.

MIDI OUT STATUS LED

MIDI IN STATUS LED

Figure 7 *SMC-9901 Front Edge Status Indicator LEDs*

SERIAL TX LED

SERIAL RX LED

POWER LED

Figure 8 *SMC-9901 Rear Edge Status Indicator LEDs*

Status LEDs

The front and rear edges of the SMC-9901 have status LEDs that display the status of power, MIDI input or output activity, as well as RS-422 serial. Refer to the following table (**Table 2**) for a description of these LEDs.

Table 2 Status LED Descriptions

LEDs	Function
Power (Green)	LED is *continually lit* when power is supplied to the SMC-9901.
Serial Tx (Yellow)	LED is lit when RS-422 serial communication signals are being transmitted.
Serial Rx (Green)	LED is lit when RS-422 serial communication signals are being received.
MIDI In Status (Green)	LED is lit when MIDI communication signals are being received.
MIDI Out Status (Yellow)	LED is lit when MIDI communication signals are being transmitted.

Specifications

Technical Specifications

Table 3 SMC-9901 — Technical Specifications

Category	Parameter	Specification
Serial Input	Transmission Standard	RS-422
	Baud Rate (fixed)	38,400 bps
MIDI Input	MIDI Specification	MIDI 1.0
MIDI Output	MIDI Specification	MIDI 1.0
Power	Required Voltage	+5V DC (5% regulation)
	Current Consumption	< 200mA typical
	Total Power	1W typical
Other	Warranty	3-year transferable
	Thermal Environment	20 – 40°C (68 – 104°F) ambient, non-condensing

Specifications are subject to change without notification.

Service Information

Warranty and Repair Policy

The RossGear 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 RossGear 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 RossGear SMC-9901 Serial to MIDI Converter User Manual of our Digital Products line provides all pertinent information for the safe installation and operation of your RossGear Product. Ross Video policy dictates that all repairs to the RossGear 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 RossGear 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 RossGear 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.

Ordering Information

Standard Equipment

- **SMC-9901 Serial to MIDI Converter**, including:
    - › one User Manual
    - › an installation kit with various mounting hardware
    - › one **PS-9000** 5V Universal Power Adaptor and line cord (pre-packaged for the country of use)

Optional Equipment

- **9901DR-004**, additional User Manual
- **PS-9000**, additional 5V Universal Power Adaptor and line cord (pre-packaged for the country of use)
- **BPM-9000**, 90° Angle Mounting Bracket (90° angle metal mounting bracket for rack and desk installation)

Your SMC-9901 Serial to MIDI Converter is part of the GearLite line of the RossGEAR family of products. Ross Video Limited offers a full line of RossGEAR digital terminal equipment including distribution, conversion, monitoring, synchronizers, encoders, decoders, amplifiers, keyers, switchers, as well as analog audio and video products.

Notes

Contact Us

Contact our friendly and professional support representatives for the following:

- Name and address of your local dealer
- Product information and pricing
- Technical support
- Upcoming trade show information

PHONE	**General Business Office and Technical Support**	613 • 652 • 4886
	After Hours Emergency	613 • 349 • 0006
	Fax	613 • 652 • 4425
E-MAIL	**General Information**	solutions@rossvideo.com
	Technical Support	techsupport@rossvideo.com
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