Ross Video Limited

ADA-7802
ADA-7802-600
ADA-7802V
Stereo/Mono Audio Distribution Amplifier
User Manual

ROSS

Cool Practical Technology™

ADA-7802/-600/V • Stereo/Mono Audio Distribution Amplifier User Manual
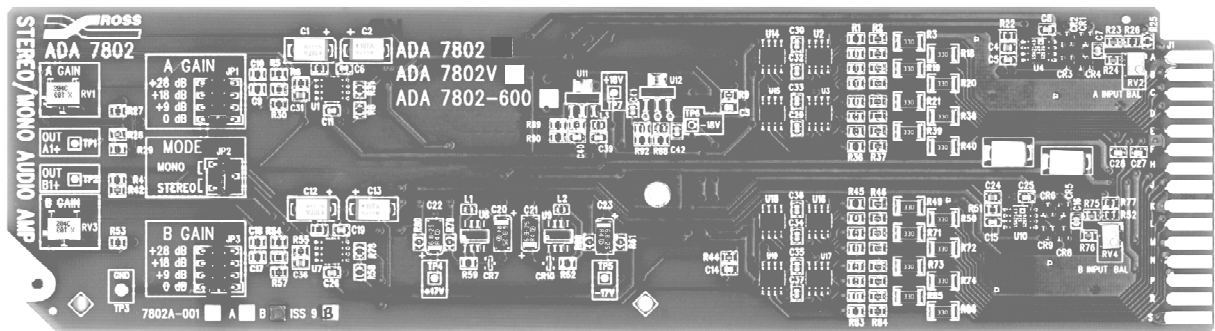
- Ross Part Number: **7802D-004**
- Document Issue: **09A**
- Printed in Canada.

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Important Regulatory and Safety Notices to Service Personnel

Please review the following material to avoid injury to personnel and to prevent product damage.

- All product servicing should be carried out by qualified service personnel.

- This product may require specific equipment, and/or installation procedures to be carried out to satisfy certain regulatory compliance requirements. The following notices have been included in the manual, to call attention to these specific requirements.

Symbol Meanings

- **Protective Earth —** This symbol alerts the user of the need to have a protective grounding source to avoid damage to electronic components.

- **Caution —** This symbol alerts the user to a procedure which may cause irreversible problems. Refer to important safety and compliance information.

- **Warning Hazardous Voltages —** This symbol alerts the user to the presence of an insulated dangerous voltage within the enclosure of the product.

Important Safety Instructions

- Do not use this device near water. Hazardous voltages can occur.

- Clean only with a dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other devices (including amplifiers) that produce heat.
- Do not defeat the safety purposes of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the device.
- Only use attachments/accessories specified by the manufacturer.
- Unplug this apparatus during lightning storms or when not in use for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the device has been damaged in any way, such as: power-supply cord or plug is damaged, objects have fallen into the device, the device has been exposed to rain or moisture, the device does not operate normally or has been dropped.

EMC Notices

- **FCC**

  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 users will be required to correct the interference at their own expense.

- **CE**

  This product has been tested and meets the requirements of the European CE marking directive. A copy of the CE Declaration of Conformity can be provided upon request.

Maintenance/User Serviceable Parts

Routine maintenance to this RossGear or 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 products are covered by a generous 5-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.
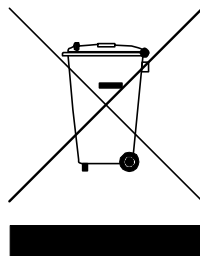
If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration.

You can also contact Ross Video for more information on the environmental performances of our products.

Contents

Introduction

In This Chapter

This chapter contains the following information sections:

- A Word of Thanks

- Overview

- Functional Block Diagram

- Features

- Documentation Terms

A Word of Thanks

Congratulations on choosing from the Ross Video **ADA-7802** family of Audio Distribution Amplifiers. The ADA-7802 distribution amplifiers are part of a full line of RossGear Terminal Equipment, backed by Ross Video's experience in engineering and design expertise since 1974.

You will be pleased at how easily your new ADA-7802 fits into your overall working environment. Equally pleasing is the product quality, reliability and functionality. Thank you for joining the group of worldwide satisfied Ross Video customers!

Should you have a question pertaining to the installation or operation of your ADA-7802, please contact us at the numbers listed in the back of this publication. Our technical support staff is always available for consultation, training, or service.

Overview

The Ross ADA-7802 family of Audio Distribution Amplifiers provides a means of amplifying and distributing program-level stereo or mono audio with virtually no loss of quality. It uses the latest types of integrated circuits, developed specifically for professional audio applications, assuring a very low level of distortion and noise. The circuit board contains two identical amplifiers which can be used for stereo distribution or as two independent four-output mono amplifiers. A jumper plug enables the amplifiers to be operated as a single eight-output mono amplifier.

The **ADA-7802** card is available in three models:

- **ADA-7802**, a 66Ω amplifier card for use in AFR-7800 series audio frames.

- **ADA-7802-600**, a 600Ω amplifier card for use in AFR-7800 series audio frames.

- **ADA-7802V**, a 66Ω amplifier card for use in AVFR-7850 series audio/video frames only.

See Chapter 3, "**Specifications**" for each model's performance details.

Please refer to the specific frame User Manual for ventilation and cooling instructions to maintain optimum operating conditions. The ADA-7802 and ADA-7802-600 cards also fit into Leitch* FR-880 series frames to provide you with additional installation versatility.

The ADA-7802 amplifiers are part of a full line of RossGear analog distribution products engineered to satisfy the highest quality broadcast standards and the most demanding requirements of your facility.
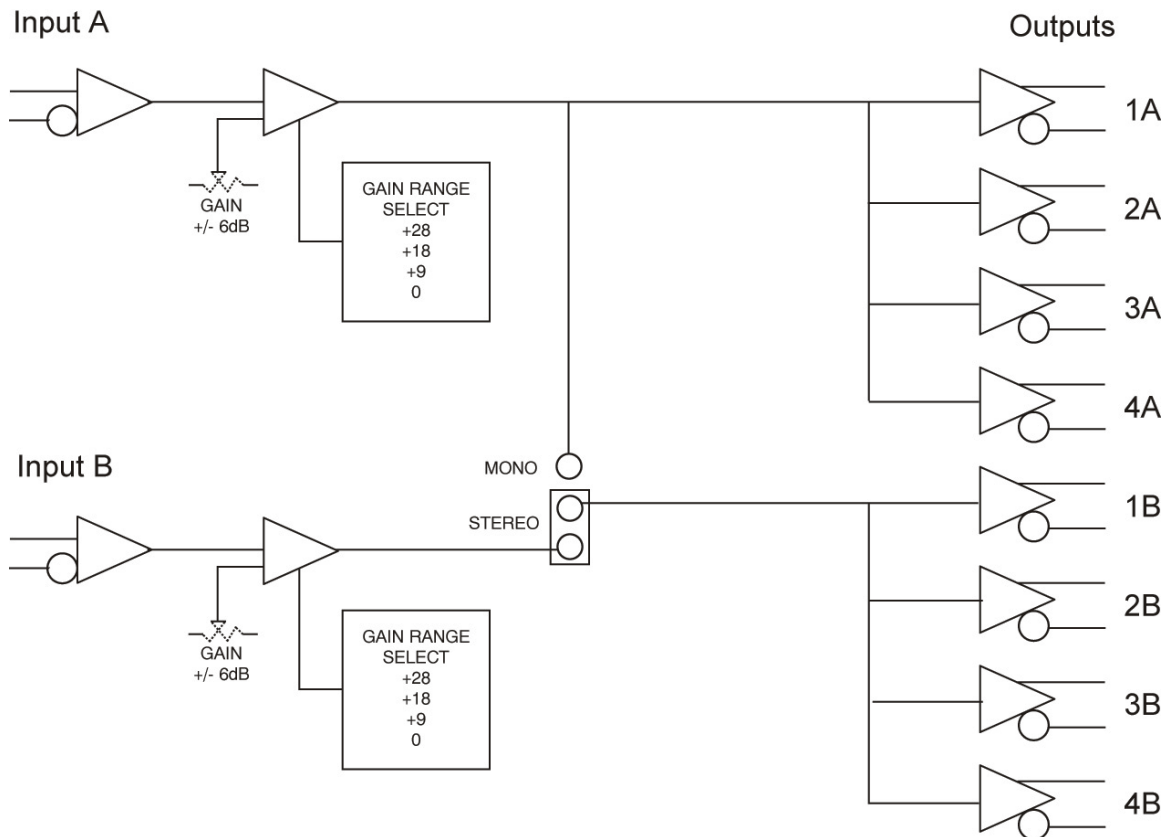
Functional Block Diagram

Figure 1. Simplified Block Diagram of the ADA-7802

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* Leitch is a trademark of Leitch Technology Corporation

Features

The following features make the ADA-7802 family of Audio Distribution Amplifiers the most flexible, high-quality card for your audio distribution requirements:

Common Features

Each amplifier version has the following common features:

- Dual amplifiers, each with 4 outputs
- Stereo or Mono modes jumper-selectable
- Extremely flat response
- Very low distortion
- Excellent common-mode rejection
- Low noise
- Output test points
- Wide gain range
- Low power consumption for cool reliable operation
- 5 year transferable warranty

ADA-7802

This amplifier version has the following unique features:

- Fits Ross AFR-7812C and AFR-7814C audio frames
- Fits Leitch 880 Series frames
- Interchangeable alternative to the Leitch ASD-880 and ADA-883 amplifier

ADA-7802-600

This amplifier version has the following unique features:

- Fits Ross AFR-7812C and AFR-7814C audio frames
- Fits Leitch 880 Series frames
- Interchangeable alternative to the Leitch ASD-880 and ADA-883 amplifier

ADA-7802V

This amplifier version has the following unique features:

- Fits Ross AVFR-7854C and AVFR-7855C audio/video frames only

Caution

> The **ADA-7802** and **ADA-7802-600** cards can only operate in RossGear **AFR-7812C**, **AFR-7814C**, or Leitch 880 Series frames. Verify correct card and frame installation.
>
> The **ADA-7802V** card can only operate in RossGear **AVFR-7854C** and **AVFR-7855C** frames. Verify correct card and frame installation.

Documentation Terms

The following terms are used throughout this guide:

- "**Frame**" refers to:
    - o the **AFR-7812C**, **AFR-7814C**, frames that can house the **ADA-7802 and ADA-7802-600** cards. See the respective User Manuals for details.
    - o the **AVFR-7854C**, and **AVFR-7855C** frames that can house the **ADA-7802V** card. See the respective User Manuals for details.
- "**Operator**" and "**User**" both refer to the person who uses the **ADA-7802** cards.
- "**Board**", "**Card**", and "**Module**" all refer to the **ADA-7802** cards, including all components.
- "**System**" and "**Audio system**" refers to the mix of interconnected analog production and terminal equipment in which the **ADA-7802** cards operate.

Installation and Setup

In This Chapter

This chapter contains the following information sections:

- Static Discharge
- Unpacking
- Jumper Setup
- Board Installation
- Potentiometer Setup
- Cable Connections

Static Discharge

Whenever handling the ADA-7802 cards and other related equipment, please observe all static discharge precautions as described in the following note:

⚠️

Caution

> 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 ADA-7802 card 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.

Jumper Setup

Use the following figure and steps to set up the ADA-7802 jumpers.
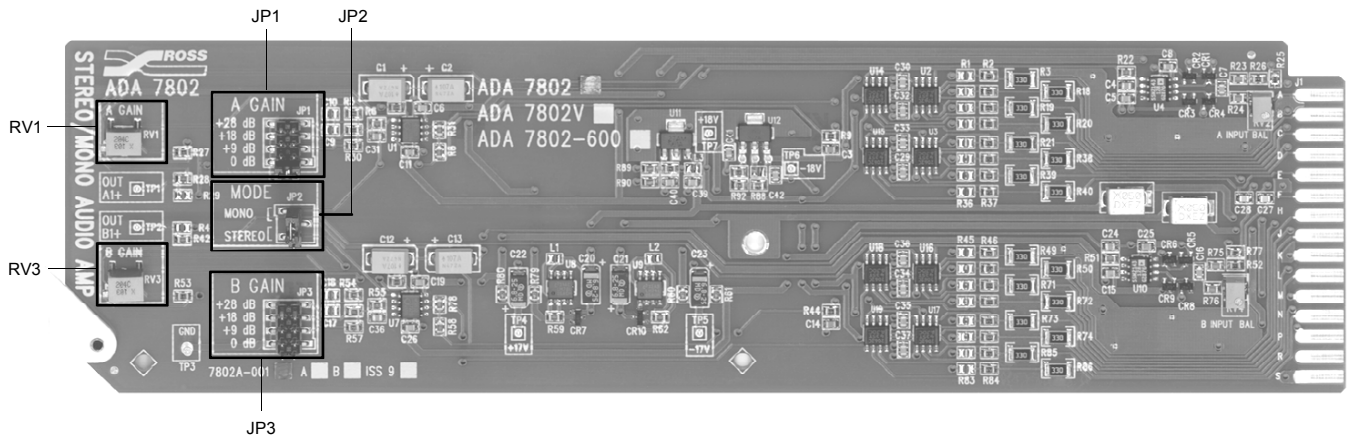
Figure 2. ADA-7802 User Control Locations

1. Set Jumper **JP2** to make the card's output stereo or mono:

    - Set the jumper to the **MONO** position to enable mono output (controlled with channel A Gain jumpers and potentiometer settings)

    - Set the jumper to the **STEREO** position to enable stereo output (default setting, controlled with channel A and B Gain jumpers and potentiometer settings)

2. Set the A Gain jumper to the desired gain range position as shown in the following table:

Table 1. A Gain Jumper settings

A Gain Jumper Settings
+28 dB
+18 dB
+9 dB
0 dB

3. Set the B Gain jumper to the desired gain range position as shown in the following table:

Table 2. B Gain Jumper settings

B Gain Jumper Settings
+28 dB
+18 dB
+9 dB
0 dB

Board Installation

Use the following steps to install the ADA-7802 cards in a RossGear audio or audio/visual distribution frame:

⚠️ **Caution**

> The **ADA-7802** and **ADA-7802-600** cards can only operate in RossGear **AFR-7812C**, **AFR-7814C**, or Leitch 880 Series frames. Verify correct card and frame installation.
>
> The **ADA-7802V** card can only operate in RossGear **AVFR-7854C** and **AVFR-7855C** frames. Verify correct card and frame installation.

1. Refer to the User Manual of the RossGear frame, to ensure that the frame is properly installed according to instructions. If this module is to be installed in any compatible frame other than a Ross Video product, refer to the frame manufacturer's manual for specific instructions.

2. Please note that heat and power distribution requirements within a frame may dictate specific slot placement of cards. Cards with many heat-producing components should be arranged to avoid areas of excess heat build-up, particularly in frames using convectional cooling.

3. After selecting the desired frame installation slot, hold the ADA-7802 card by the edges and carefully align the card edges with the slots in the frame. Then fully insert the card into the frame until the rear connection plug is properly seated.

Potentiometer Setup

Use Figure 2 and the following steps to set up the ADA-7802 potentiometers.

1. Set the A Gain potentiometer to the desired gain range. The potentiometer provides a fine control of the gain and has a range of +/- 6dB.

2. Set the B Gain potentiometer to the desired gain range. The potentiometer provides a fine control of the gain and has a range of +/- 6dB.

Cable Connections

This section provides instructions for connecting cables to the ADA-7802 when mounted in RossGear frames. See the following frame rear panel diagram for cable input and output designations.

On the rear of the Ross frame there are removable connectors for the A and B channel inputs and outputs. Each channel has 1 input and 4 outputs. Unused outputs do not need to be terminated.

Each connector has sockets for the positive, negative, and ground wires of a balanced analog audio cable. Wire the cables to the removable terminal block connectors as outlined in the following figures and procedure.
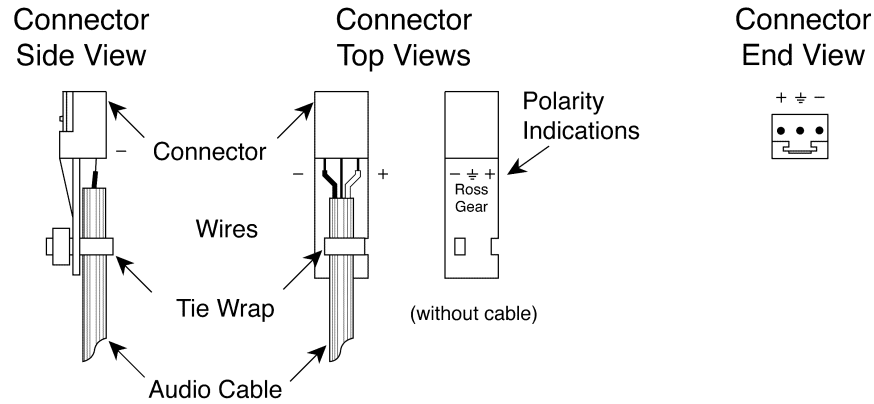
Figure 3. Connector Wiring for ADA-7802 Inputs and Outputs

1. Insert an audio wire into the designated polarity slot on the connector.
2. Use a tweaker screwdriver to tighten the corresponding screw on the underside of the connector.
3. Repeat steps 1 and 2 for each wire on each connector.
4. Secure the cable to the connector with a tie wrap.
5. Once the cables have been wired to the connectors, install the connectors to the sockets on the RossGear frame so that the slotted tongue fits in the grooves on the frame's mating connector.

Figure 4. ADA-7802 Cabling Designations for Rossgear 7812C and 7814C Series Frames

Note

When using the ADA-7802 in **MONO** mode, use the same outputs as you would when operating in **STEREO** mode. The outer labeling on the frame diagram above refers to the cabling requirements for an ADA-7801, which is a mono amplifier.

Specifications

In This Chapter

This chapter contains the following sections:

- ADA-7802 Technical Specifications
- ADA-7802-600 Technical Specifications
- ADA-7802V Technical Specifications

ADA-7802 Technical Specifications

Category	Parameter	Specification
Input	Input Impedance	>35kΩ, balanced
	Max Input Level	+34dBu
	Common Mode Rejection	>100dB @ 60Hz, >70dB @ 20kHz
Output	Number of Outputs	4 stereo outputs, jumper selectable to 8 mono outputs
	Max Output Level	+28dBu
	Output Impedance	66Ω
	Output Isolation	>70dB
Performance	S/N Ratio	>100dB (unity gain) relative to +8dBu
	Gain Range	-6 to +34dB (± 6dB fine adjustment)
	Frequency Response	± 0.02dB 20Hz to 20kHz
	Total Harmonic Distortion + Noise	<0.002%
	Intermodulation	<0.002% (SMPTE)
	Crosstalk between Amplifiers	>100dB
	Interchannel Crosstalk	>95dB
	Power Consumption @ +8dBu output	2.1W

All tests performed at +18dBu and cover 20Hz to 20kHz unless otherwise specified. All measurements made with an Audio Precision test set. Specifications are subject to change without notification.

ADA-7802-600 Technical Specifications

Category	Parameter	Specification
Input	Input Impedance	>35kΩ, balanced
	Max Input Level	+30dBm
	Common Mode Rejection	>100dB @ 60Hz, >70dB @ 20kHz
Output	Number of Outputs	4 stereo outputs, jumper selectable to 8 mono outputs
	Max Output Level	+23dBm
	Output Impedance	600Ω
	Output Isolation	>70dB
Performance	S/N Ratio	>100dB (unity gain) relative to +8dBm
	Gain Range	-6 to +34dB (± 6dB fine adjustment)
	Frequency Response	± 0.02dB 20Hz to 20kHz
	Total Harmonic Distortion + Noise	<0.007%
	Intermodulation	<0.006% (SMPTE)
	Crosstalk between Amplifiers	>100dB
	Interchannel Crosstalk	>95dB
	Power Consumption @ +8dBm output	3.1W

All tests performed at +8dBm and cover 20Hz to 20kHz unless otherwise specified. All measurements made with an Audio Precision test set. Specifications are subject to change without notification.

ADA-7802V Technical Specifications

Category	Parameter	Specification
Input	Input Impedance	>35kΩ, balanced
	Max Input Level	+30dBu
	Common Mode Rejection	>100dB @ 60Hz, >70dB @ 20kHz
Output	Number of Outputs	4 stereo outputs, jumper selectable to 8 mono outputs
	Max Output Level	+27dBu
	Output Impedance	66Ω
	Output Isolation	>70dB
Performance	S/N Ratio	>100dB (unity gain) relative to +8dBu
	Gain Range	-6 to +34dB (± 6dB fine adjustment)
	Frequency Response	± 0.02dB 20Hz to 20kHz
	Total Harmonic Distortion + Noise	<0.002%
	Intermodulation	<0.002% (SMPTE)
	Crosstalk between Amplifiers	>100dB
	Interchannel Crosstalk	>95dB
	Power Consumption @ +8dBu output	1.5W

All tests performed at +18dBu and cover 20Hz to 20kHz unless otherwise specified. All measurements made with an Audio Precision test set.

Specifications are subject to change without notification.

Ordering Information

In This Chapter

This chapter contains:

- Ordering information for the ADA-7802 and related products
- Troubleshooting Checklist
- Warranty and Repair Policy

ADA-7802 Family of Audio Cards and Related Products

Standard Equipment

- **ADA-7802** Stereo/Mono Audio Distribution Amplifier
- **ADA-7802-600** Stereo/Mono Audio Distribution Amplifier
- **ADA-7802V** Stereo/Mono Audio Distribution Amplifier

Optional Equipment

- **7802D-004** Stereo/Mono Audio Distribution Amplifier User Manual (additional User Manual)
- **AFR-7812C** Audio Products Frame and Power Supply (PS-7813) (2 RU, holds 12 modules, includes 1 power supply)
- **AFR-7814C** Audio Products Frame and Power Supply (PS-7813) (1 RU, holds 4 modules, includes 1 power supply)
- **AVFR-7854C** Analog Products Frame and Power Supply (PS-7103) (1RU, holds 2 audio and 2 video modules, includes 1 power supply)
- **AVFR-7855C** Analog Products Frame and Power Supply (PS-7103) 2RU, holds 5 audio and 5 video modules, includes 1 power supply)
- **PS-7813** Power Supply (85-264 volts) (redundancy option power supply for Ross 7800 series 2RU audio product frames)

Your **ADA-7802** is a part of the RossGEAR family of products. Ross Video Limited offers a full line of RossGear Terminal Equipment including Distribution, Conversion, Monitoring, Synchronizers, Encoders, Decoders, AES, Keyers, Control Switchers, as well as Analog Audio and Video products**.**

Troubleshooting Checklist

Routine maintenance to this RossGear product is not required. In the event of problems with your ADA-7802, the following basic troubleshooting checklist may help identify the source of the problem. If the module still does not appear to be working properly after checking all possible causes, please contact your Ross Video products distributor, or the Ross Video Technical Support department at the numbers listed under the "**Contact Us**" section at the end of this manual.

1. **Visual Review –** Performing a quick visual check may reveal many problems, such as connectors not properly seated or loose cables. Check the module, the frame, and any associated peripheral equipment for signs of trouble.

2. **Power Check –** Check the power indicator LED on the distribution frame front panel for the presence of power. If the power LED is not illuminated, verify that the power cable is connected to a power source and that power is available at the power main. Confirm that the power supplies are fully seated in their slots. If the power LED is still not illuminated, replace the power supply with one that is verified to work.

3. **Reseat the Card in the Frame** – Eject the card and reinsert it in the frame.

4. **Check Control Settings –** Refer to the Installation and Operation sections of the manual and verify all user-adjustable component settings including correct BNC designations.

5. **Input Signal Status –** Verify that source equipment is operating correctly and that a valid signal is being supplied.

6. **Output Signal Path –** Verify that destination equipment is operating correctly and receiving a valid signal.

7. **Module Exchange** – Exchanging a suspect module with a module that is known to be working correctly is an efficient method for localizing problems to individual modules.

Warranty and Repair Policy

The RossGear ADA-7802 is warranted to be free of any defect with respect to performance, quality, reliability, and workmanship for a period of FIVE (5) years from the date of shipment from our factory. In the event that your RossGear ADA-7802 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 ADA-7802 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 FIVE (5) 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 ADA-7802 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 RossGear ADA-7802 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 ADA-7802, 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 ADA-7802. 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.

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
POSTAL SERVICE	**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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