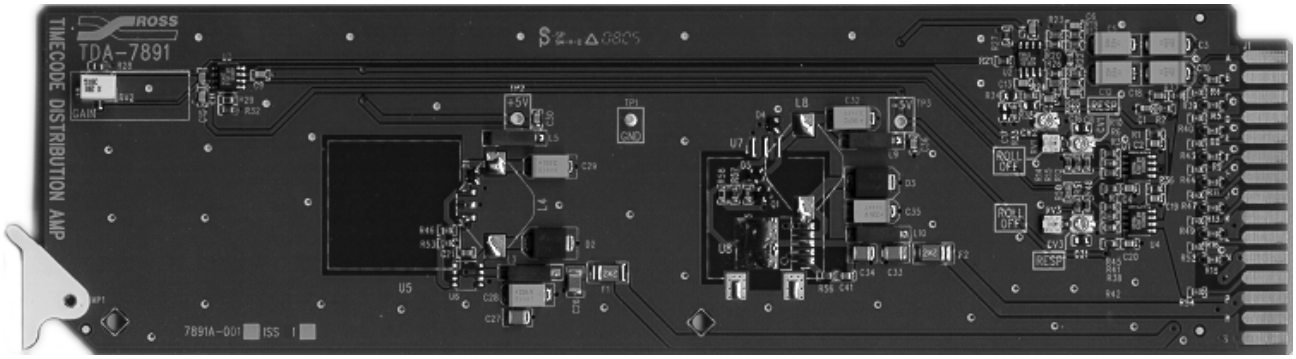
Ross Video Limited

TDA-7891

Timecode
Distribution Amplifier

User Manual



Ross Part Number: 7891D-004
Issue: 01

ROSS
Cool Practical Technology™

TDA-7891 • Timecode Distribution Amplifier User Manual

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- Document Issue: **01**
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Notice

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Trademarks

Important Regulatory and Safety Notices

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

Products may require specific equipment, and /or installation procedures 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

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.

Notice

The symbol with the word "**Notice**" within the equipment manual indicates a situation, which if not avoided, may result in major or minor equipment damage or a situation which could place the equipment in a non-compliant operating state.

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

Caution

This product is intended to be a component product of the RossGear 7800 series frame. Refer to the RossGear 7800 series frame User Manual for important safety instructions regarding the proper installation and safe operation of the frame as well as it's component products.

Warning

Certain parts of this equipment namely the power supply area still present a safety hazard, with the power switch in the OFF position. To avoid electrical shock, disconnect all A/C power cords from the chassis' rear appliance connectors before servicing this area.

Warning

Service barriers within this product are intended to protect the operator and service personnel from hazardous voltages. For continued safety, replace all barriers after any servicing.

This product contains safety critical parts, which if incorrectly replaced may present a risk of fire or electrical shock. Components contained within the product's power supplies and power supply area, are not intended to be customer serviced and should be returned to the factory for repair.

To reduce the risk of fire, replacement fuses must be the same type and rating.

Only use attachments/accessories specified by the manufacturer.

EMC Notices

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

Notice

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

CANADA

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

Cet appareil numerique de classe "A" est conforme à 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.

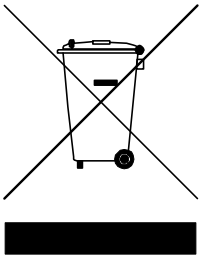
Maintenance/User Serviceable Parts

Routine maintenance to this RossGear 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 the Ross Video **TDA-7891** Timecode Distribution Amplifier. The TDA-7891 Timecode Distribution Amplifier is 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 TDA-7891 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 TDA-7891 Timecode Distribution Amplifier, 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 Video TDA-7891 Timecode Distribution Amplifier provides a means of distributing timecode signals with virtually no loss of quality. The **TDA-7891** Timecode Distribution Amplifier is a high input impedance amplifier with eight 150Ω outputs for use in AFR-7800 series audio frames.

See Chapter 3, "**Specifications**" for performance details.

Please refer to the specific frame User Manual for ventilation and cooling instructions to maintain optimum operating conditions.

The TDA-7891 Timecode Distribution Amplifier card is a 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

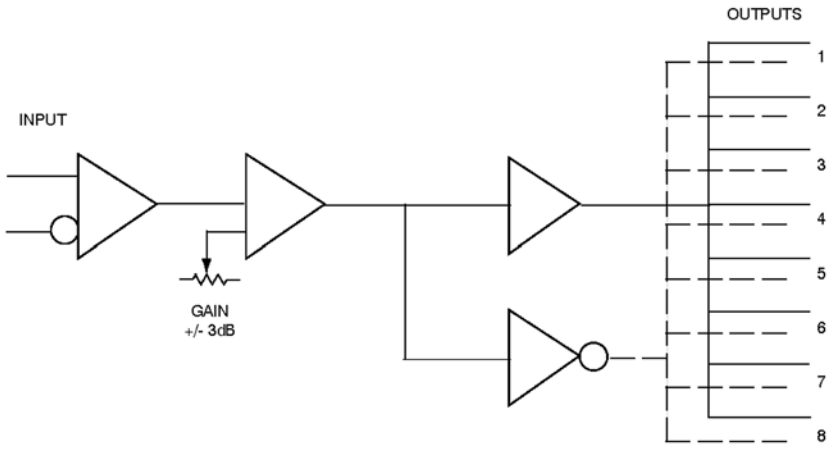


Figure 1. Simplified Block Diagram of the TDA-7891

Features

The following features make the TDA-7891 Timecode Distribution Amplifier the most flexible, high-quality card for your timecode distribution requirements:

- AC coupled differential input
- High Impedance input
- 8 differential outputs
- Flat frequency response to 20MHz
- Wide bandwidth to accommodate signals from tape decks in shuttle mode
- Short signal delay
- 5 year transferable warranty
- Fits Ross AFR-7812C and AFR-7814C audio frames

Documentation Terms

The following terms are used throughout this guide:

- "**Frame**" refers to the **AFR-7812C** or the **AFR-7814C** frame that can house the **TDA-7891** card. See the respective User Manuals for details.
- "**Operator**" and "**User**" both refer to the person who uses the **TDA-7891** card.
- "**Board**", "**Card**", and "**Module**" all refer to the **TDA-7891** module, including all components.
- "**System**" and "**Audio system**" refers to the mix of interconnected analog production and terminal equipment in which the **TDA-7891** card operates.

Installation and Setup

In This Chapter

This chapter contains the following information sections:

- Static Discharge
- Unpacking
- Board Installation
- Gain Potentiometer Setup

Static Discharge

Whenever handling the TDA-7891 Timecode Distribution Amplifier card 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 TDA-7891 Timecode Distribution Amplifier 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.

Board Installation

Use the following steps to install the TDA-7891 Timecode Distribution Amplifier card in a RossGear audio distribution frame:

- 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.
- 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.
- After selecting the desired frame installation slot, hold the TDA-7891 Timecode Distribution Amplifier 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.

Gain Potentiometer Setup

If necessary, use a tweaker screwdriver to adjust the **RV2** Gain potentiometer to the desired gain range. See Figure 2, below, for potentiometer location. The potentiometer provides a fine control of the gain and has a range of ± 3dB.

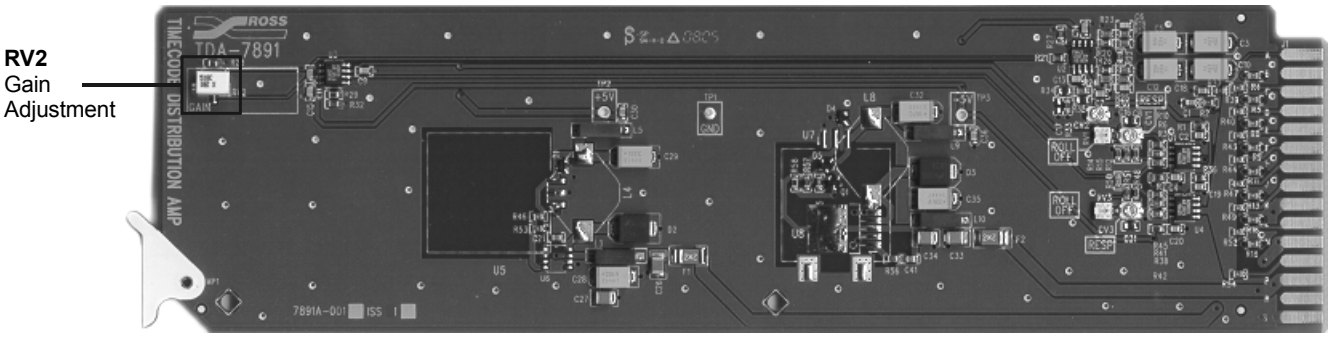
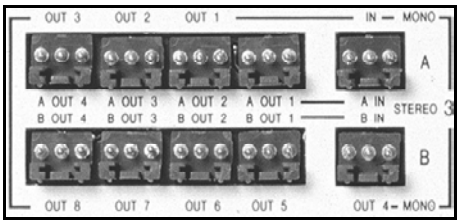


Figure 2. TDA-7891 Gain Potentiometer Location

Cable Connections

This section provides instructions for connecting cables to the TDA-7891 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 mono input and eight mono outputs. See Figure 3 below and the manual for the frame in which you have installed the TDA-7891 for further details on mono cable connections.



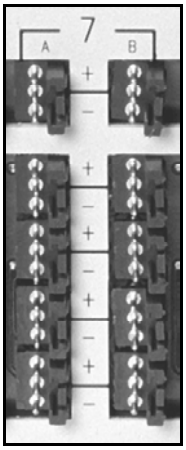


Figure 3. TDA-7891 Cabling Designations for RossGear 7814C and 7812C Series Frames

Note

The TDA-7891 has eight 150Ω outputs designed to drive high impedance (>10kΩ) loads.

Each connector has sockets for the positive, negative, and grounded wires of a balanced cable. Wire the external cables to the removable terminal block connectors as outlined in Figure 4 and the procedure on page 2-4.

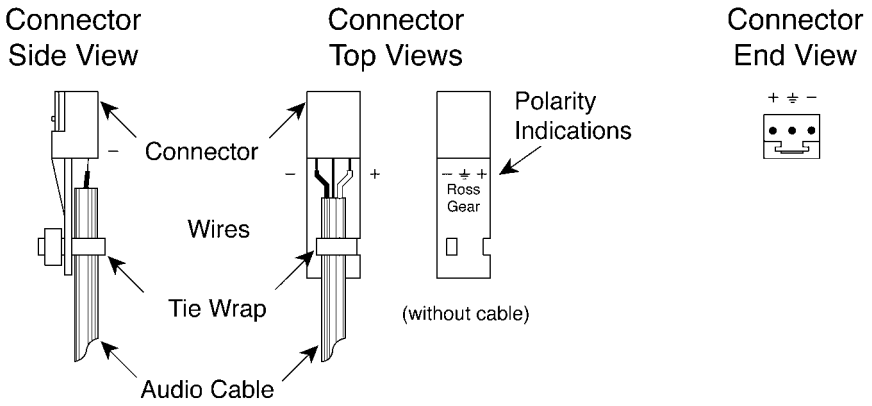


Figure 4. Connector Wiring for TDA-7891 Inputs and Outputs

1. Insert a 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.

Specifications

In This Chapter

This chapter contains the following section:

- TDA-7891 Technical Specifications

TDA-7891 Technical Specifications

Table 1. TDA-7891 Specifications

Category	Parameter	Specification
Input	Number Of inputs	1 Non-Bridging
	Input Coupling	AC
	Input Level	2Vp-p nominal 16Vp-p MAX
	Input Impedance	>12kΩ Balanced
	Max DC on Input	±12V
	CMRR	>56dB @ 50/60Hz
	Max Common mode signal	12Vp-p @ 50/60Hz
Output (into 10kΩ)	Number of Outputs	8
	Output Impedance	150Ω
	Output Isolation	>36dB to 20MHz
	DC Offset	>50mV
	Electrical Length	16ns Typical
	Max Output Amplitude	12.25Vp-p
Performance (all outputs terminated into 10kΩ)	Gain Range	±3dB
	Gain Stability	<0.1% per 10 °C at 10MHz
	Frequency Response	+0.03/-0.08dB 20Hz to 100kHz ±0.25dB 0.1 to 20MHz
	Bandwidth	32MHz (-3 dB Typical)
	Noise (RMS unweighted 0-5MHz)	-56dB
	THD+N 30kHz Bandwidth, +8dBm input	0.05%
Power	Total Consumption	1.2W

Specifications are subject to change without notification.

Service Information

In This Chapter

This chapter contains the following sections:

- Troubleshooting Checklist
- Warranty and Repair Policy

Troubleshooting Checklist

Routine maintenance to this RossGear product is not required. In the event of problems with your TDA-7891 Timecode Distribution Amplifier, 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 components.
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 TDA-7891 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 TDA-7891 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 TDA-7891 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 TDA-7891 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 TDA-7891 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 TDA-7891, please contact Ross Video Technical Support. (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 TDA-7891. 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.

Ross Video Technical Support 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

In This Chapter

This chapter contains ordering information for the TDA-7891 and related products.

TDA-7891 Family of Audio Cards and Related Products

Standard Equipment

- **TDA-7891** Timecode Distribution Amplifier

Optional Equipment

- **7891D-004** Timecode 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)
- **311-050** Spare Removable Terminal Block Connector

Your **TDA-7891** Timecode Distribution Amplifier is a part of the RossGear family of products. Ross Video offers a full line of RossGear terminal equipment including distribution, conversion, monitoring, synchronizers, encoders, decoders, keyers, switches, as well as analog audio and video products.

Notes:

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 • 652 • 4886 ext. 333
	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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