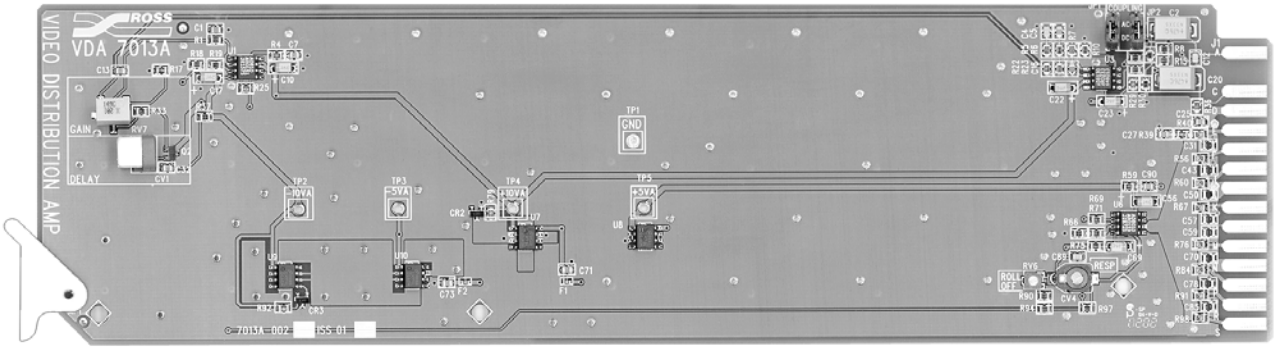
Ross Video Limited

VDA-7013A

Video Distribution Amplifier

User Manual



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Issue: 01

Cool Practical Technology™

VDA-7013A • Video Distribution Amplifier User Manual

- Ross Part Number: **7013AD-004**
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Trademarks

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 —** Protective Earth (PE) terminal. Provided for connection of the protective earth (green or green/yellow) supply system conductor.

- **Caution —** This CAUTION symbol on the equipment refers you to the Product Manual for additional information. This symbol appears next to required information in the manual.

- **WARNING PERSONAL INJURY:** Risk of electrical shock. This symbol warns you of a potential shock hazard where HAZARDOUS LIVE voltages greater than 35V peak or 60Vdc may be accessible. **Failure to comply with these instructions could result in death or serious injury.**

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

- **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 GearLite 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.

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 VDA-7013A Video Distribution Amplifier. The VDA-7013A is part of a full line of Analog Products within the RossGear Terminal Equipment family of analog and digital products, backed by Ross Video's experience in engineering and design expertise since 1974.

You will be pleased at how easily your new VDA-7013A fits into your overall working environment. Equally pleasing is the product quality, reliability and functionality. Thank you for joining the worldwide group of satisfied Ross Video customers!

Should you have a question pertaining to the installation and operation of your VDA-7013A, please contact us at the numbers listed on the last page of this publication. Our technical support staff is always available for consultation, training, or service.

Overview

The RossGear VDA-7013A Video Distribution Amplifier is an eight output, economical, general-purpose distribution amplifier with excellent specifications. The amplifier may be used in any application where cable equalization is not required. Surface Mount Technology has been used in the manufacture of this card to ensure high component-to-board integrity, and eliminate the need for field adjustments.

The differential input ensures excellent system performance by virtually eliminating common-mode ground loop hum. The amplifier input may be AC or DC coupled. The high output capacity of the VDA-7013A makes it a good choice for subcarrier distribution purposes.

Temperature drift effects are almost non-existent thanks to the use of the latest in analog ASIC's combined with meticulous product engineering.

The VDA-7013A card is designed for use in the RossGear 7200 series video, and 7850 series A/V distribution frames. The power to each card is individually fused to prevent failure of any one card from affecting the rest of the cards in the frame. RossGear analog (and digital) cards are also designed to fit into distribution frames of some other manufacturers to allow installation flexibility.

The VDA-7013A fills an important role within the full line of RossGear video distribution products, engineered to satisfy the highest quality broadcast standards and the most demanding requirements of your facility.

Functional Block Diagram

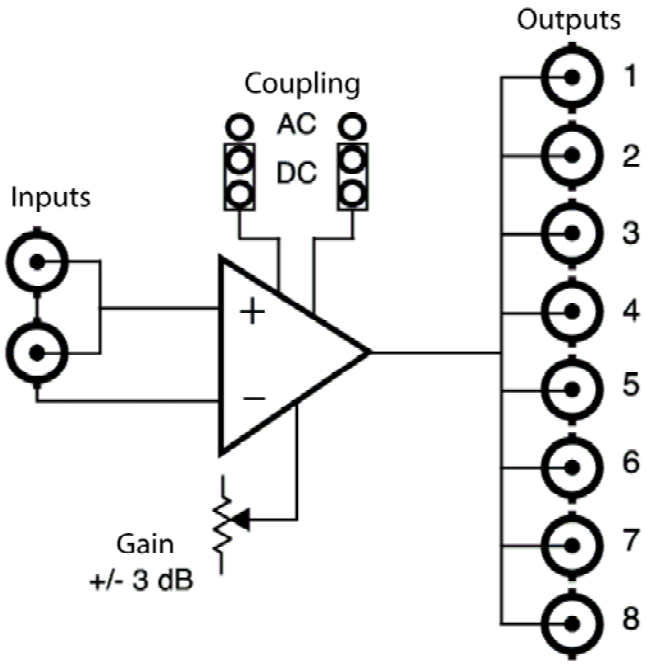

Figure 1. Simplified Block Diagram of VDA-7013A Functions

Features

The following features are unique to the VDA-7013A Video Distribution Amplifier:

- Eight outputs
- AC or DC input coupling
- Delay matched for precise interchangeability
- Delay adjustable if required for system timing
- Superb stability of frequency response and color timing
- Differential input for outstanding ground loop hum rejection
- Excellent isolation between outputs
- Power to each card is individually fused
- 5-year transferable warranty

Documentation Terms

The following terms are used throughout this guide:

- "**Frame**" refers to the **VFR-7214**, **VFR-7210**, **AVFR-7854C**, and **AVFR-7855C** frames that can house the VDA-7013A cards. See the respective User Manuals for details.
- "**Operator**" and "**User**" both refer to the person who uses the **VDA-7013A** cards.
- "**Board**", "**Card**", and "**Module**" all refer to the **VDA-7013A** cards, including all components.
- "**System**" refers to the mix of interconnected analog production and terminal equipment in which the **VDA-7013A** cards operate.

Installation and Setup

In This Chapter

This chapter contains the following information sections:

- Static Discharge
- Unpacking
- Input Coupling Setup
- Board Installation
- Cable Connections
- Gain and Delay Setup

Static Discharge

Whenever handling the VDA-7013A 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 VDA-7013A 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.

Input Coupling Setup

Use the following figure, card labeling, and discussion to set up VDA-7013A input coupling jumpers.

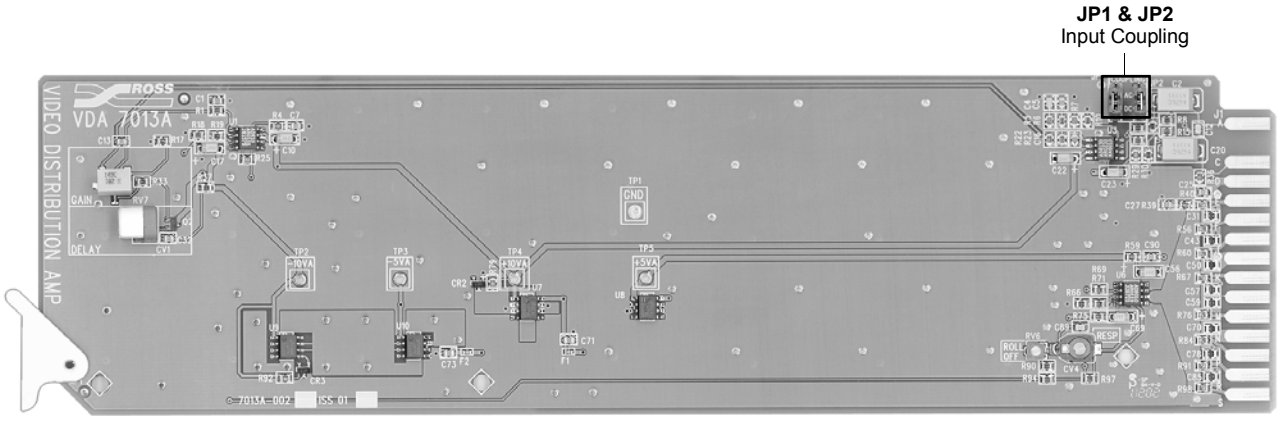

Figure 2. VDA-7013A Jumper Locations

Set jumpers **JP1** and **JP2** to select the desired input coupling type. The two jumpers must *both* be positioned on the same setting:

- **AC** — if the back porch of the input signal is displaced from ground level by more than ±0.5 Volts DC.
- **DC** — if you want the entire amplifier to be DC coupled (default setting).

Board Installation

Use the following steps to install the VDA-7013A cards in a RossGear 7200 series Video, or 7850 series A/V distribution frame:

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 VDA-7013A 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.

Cable Connections

The following diagram provides instruction for connecting input and output coax cables to the VDA-7013A when mounted in RossGear 7200 series Video, and 7850 series A/V distribution frames.

It is recommended that all unused outputs be terminated. The specifications in this manual are based on all outputs being terminated.

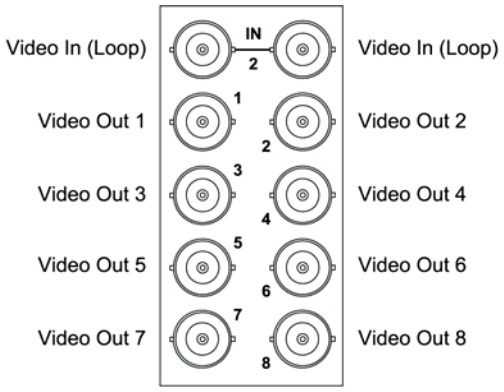

Figure 2. VDA-7013A Cabling Designations for RossGear 7200 and 7850 Series Frames

Gain and Delay Setup

Use the following figure, card labeling, and discussions to set up VDA-7013A gain and delay settings.

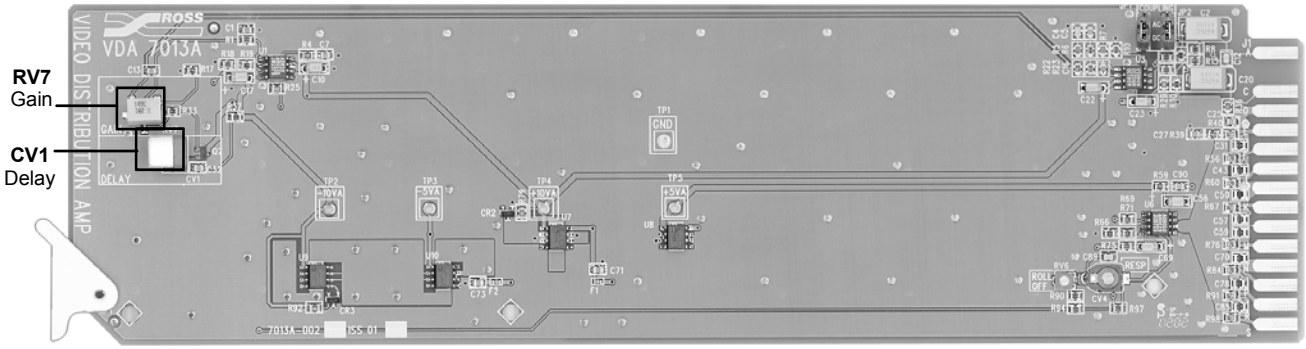

Figure 3. VDA-7013A Potentiometer Locations

Gain

Set **RV7** as required to achieve unity gain. Use any suitable test signal that would enable the signal gain and subcarrier level to be correctly set (e.g. pulse and bar or color bar). A sweep signal can be used, but is not normally necessary.

Delay

Set **CV1** as required to adjust equalization for your system. The **CV1** delay adjustment is factory-set to ensure that the path length of every VEA-7013A is precisely matched. The 7013A is factory-calibrated to have a delay of 24.0ns. This allows for maximum interchangeability of VEA-7013A cards without affecting system timing. Changing from the factory setting will make this card non-interchangeable due to differences in delay. However, if desired, and interchangeability is not important, the timing adjustment **CV1** may be used to resolve minor system timing problems.

Specifications

In This Chapter

This chapter contains the VDA-7013A Technical Specifications table.

VDA-7013A Technical Specifications

Category	Parameter	Specification
Input	Number of Inputs	1 looped
	Video Input Level	1V p-p
	Input Impedance	75Ω bridging
	Input Return Loss	43dB to 5MHz
	Max DC on Input	+8 / -1V
	Max Common Mode Signal	16V p-p
	Common Mode Rejection	60dB @ 60Hz
Output	Number of Outputs	8
	Output Impedance	75Ω
	Output Return Loss	43dB to 5MHz
	Output Isolation	42dB to 5MHz
	DC Offset	<30mV
	Output Loading (per termination at 10MHz)	0.02dB
Performance (all outputs loaded)	Gain Range	±3dB
	Gain Stability	<0.1% per 10°C
	Frequency Response	±0.01dB to 12MHz
	Bandwidth	-3dB @ 32MHz
	Line Rate Window Tilt	<0.2%
	Field Rate Window Tilt	<0.2%
	50/60Hz Square Wave Tilt	<0.3% (10 – 90%)
	Bounce (black to white)	<0.1%
	Differential Gain (10%-90% APL)	<0.2%
	Differential Phase (10%-90% APL)	<0.2°
	RMS Noise 0-5 MHz (unweighted)	76dB
	Chrominance/Luminance Delay	<2.0ns
	K Rating 1 T	0.3%
Power	Total Consumption	1.84W

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 VEA-7013A, 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. Ross Video Ltd. is committed to providing a superior customer experience; please contact us with any questions you may have about your VEA-7013A.

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**.
4. **Check Control Settings –** Refer to the Installation and Operation sections of the manual and verify all user-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 VDA-7013A 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 VDA-7013A 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 VDA-7013A has failed after your warranty period has expired, we will repair your defective product for as long as suitable replacement components are available. You, the owner, will bear any labor and/or component 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 VDA-7013A Video Distribution Amplifier User Manual of our Analog Video 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 VDA-7013A 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 VDA-7013A, 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 VDA-7013A. A temporary replacement module, if required, 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 this equipment.

Ordering Information

In This Chapter

This chapter contains ordering information for the VDA-7013A and related products.

VDA-7013A Video DA and Related Products

Standard Equipment

- **VDA-7013A** Video Distribution Amplifier

Optional Equipment

- **7013AD-004** Video Distribution Amplifier User Manual (additional User Manual)
- **VFR-7214** Video Products Frame and Power Supply (PS-7103) (1 RU, holds 4 modules, includes 1 power supply)
- **VFR-7210** Video Products Frame and Power Supply (PS-7103) (2 RU, holds 10 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-7103** Power Supply (85-250 Volts)
- **EXT-7200** Extender Board (module servicing extension)
- **FSB-7110** Frame Support Bracket (module servicing extension)

Your **VDA-7013A Video Distribution Amplifier** is 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**.**

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
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