

9231

**Analog Video Distribution Amplifier w/ Differential Input,
Clamping and Cable Equalization**

Owner's Manual



Cobalt Part Number: 9231
v.1.1



9231 • Analog Video Distribution Amplifier w/ Loop Output

Cobalt Digital Part Number: 9231

- V.1.1
- Printed in the USA.

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-  is a registered trademark of Cobalt Digital Inc.

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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 openGear 8000 series frame. Refer to the openGear 8000 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 Cobalt Digital Inc. could void the user's authority to operate this equipment.

CANADA

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

Cet appareil numérique 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

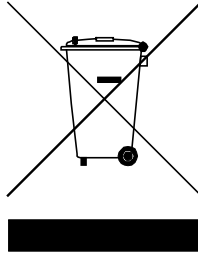
Routine maintenance to this openGear product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the "Contact Us" section on the last page of this manual. All openGear products 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, Cobalt Digital Inc. 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.

Introduction

This chapter contains the following sections:

- Overview
- Functional Block Diagram
- Features
- Documentation Terms

Overview

The 9231 is an analog video distribution amplifier with a differential input designed for broadcast use. It has one input and can provide up to eight outputs. The 9231 can be addressed through Dashboard to report card status and activate features.

The 9231 is housed in the openGear 8310-C series frames.

Functional Block Diagram

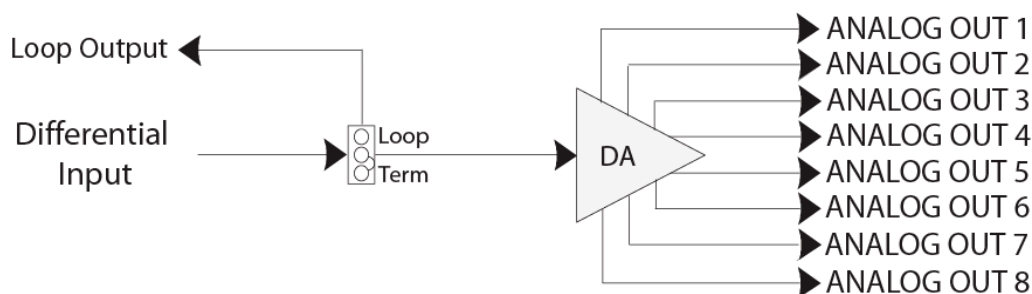


Figure 1. Simplified Block Diagram of the 9231 Functions

Features

The following features make the 9231 the best solution for analog video distribution.

- Equipped with a differential input
- Offers input clamping
- Has a +/- 3 dB trim range to match levels
- Handles NTSC or PAL composite signals
- 5 year warranty
- Fits openGear 8310-C series frames

Documentation Terms

The following terms are used throughout this guide:

- **“Frame”** refers to the **8310-C** frame that houses the **9231** card.
- **“Operator”** and **“User”** refer to the person who uses the **9231**.
- **“Board”**, and **“Card”** refer to the **9231** card itself, including all components and switches.

Installation and Setup

This chapter contains the following sections:

- Static Discharge
- Unpacking
- Rear Module Options
- Board Installation

Static Discharge

Whenever handling the 9231 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 9231 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 Cobalt Digital Inc. directly.

Rear Module Installation (Optional)

If you are installing the card into a slot with no rear module, you should have ordered and received one of the RM-9231-B modules. You will need to install it in your 8310 frame before you can connect cables.

Use the following steps to install a rear module in an 8310 openGear™ frame:

1. Refer to the openGear™ 8310 frame Owner's Manual, to ensure that the frame is properly installed according to instructions.
2. On the rear of the 8310, locate the card frame slot.
3. As shown in Figure 2, seat the bottom of the rear module in the seating slot at the base of the frame's back plane.

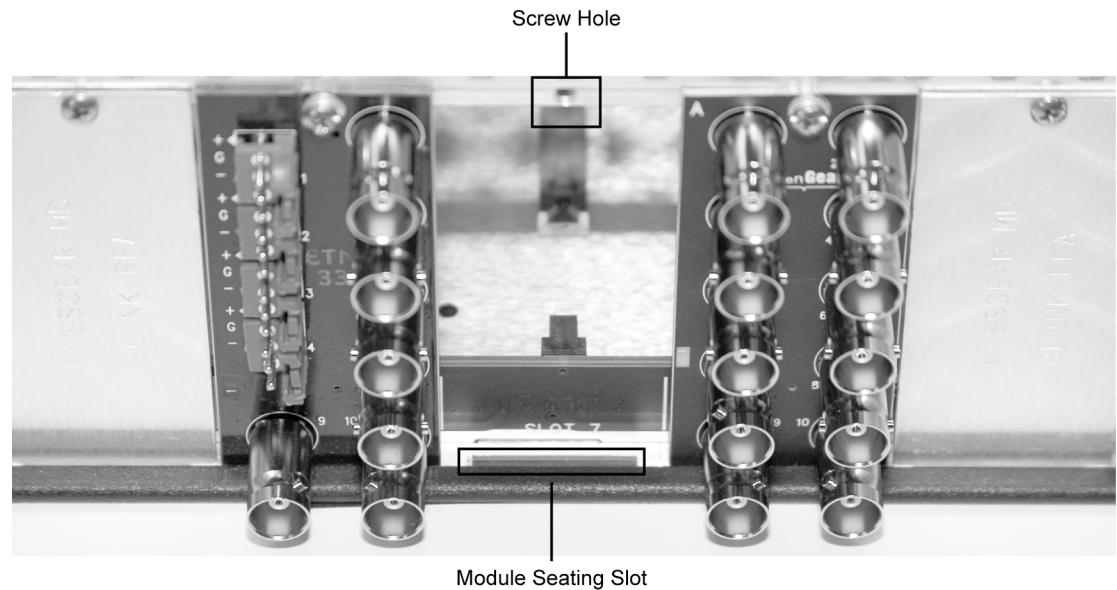


Figure 2. Rear Module Installation

4. Align the top hole of the RM-9231-B with the screw hole on the top edge of the 8310 back plane.
5. Using a Phillips driver and the supplied screw, fasten the rear module to the 8310 back plane. Do not over tighten.

All modules are installed using the same method above.

The following section contains a drawing of the RM-9231-B module. (RM20-9231-A/S rear module usable in 20-slot frame only.)

Rear Module Options

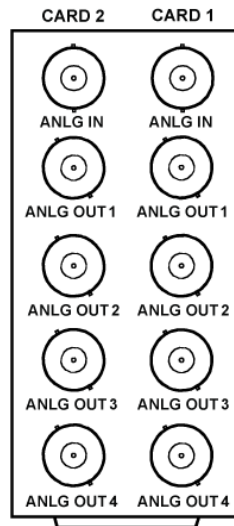
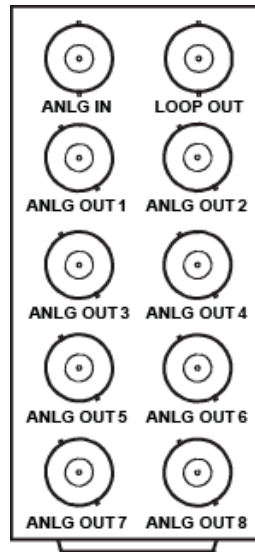


Figure 2. RM-9231-B and RM20-9232-A/S Rear Module

Board Installation

Use the following procedure to install the 9231 in an openGear 8310-C Series frame.

1. Refer to the User Manual of the openGear 8310-C series frame to ensure that the frame is properly installed according to instructions.
2. After selecting the desired frame installation slot, hold the 9231 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 plugs are properly seated on the midplane and rear module.

This completes the procedure for installing the 9231 in an openGear 8310-C Series frame.

User Controls

This chapter contains a description of the 9231 user controls:

- LEVEL CONTROLS
- LEDs
- Jumper Settings
- Remote Control

User Controls

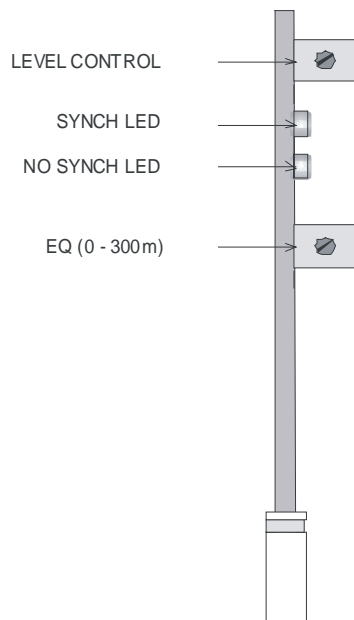


Figure 3. Card-edge User Controls

Level

The level control is used to adjust the output levels of the 9231. This potentiometer gives precise control of the output signal over a ± 3 dB range

EQ(0 – 300m)

Provides continuously variable equalization for cable lengths from 0 to 300 metres.

LEDs

The front-edge of the card features LEDs that display the status of the input signals.

Descriptions are provided in the following table:

LED	Color	Location	Display and Description
SYNCH	Green	Top of the card	When illuminated there is a valid analog signal at the input.
NO SYNCH	Green	Second from the top	When illuminated there is not a valid analog signal at the input.

Table 1. Status LED Descriptions

Jumper Settings

TERM
HI Z



Selects the input termination, either high impedance or 75 Ohms.

BAL



Selects between a balanced and differential input configuration.

ON  OFF
CLAMP

Turns clamping circuit on or off.

REMOTE CONTROL

DashBoard Control

This card may be monitored by a remote computer through DashBoard the free configuration monitoring software available to openGear users.

With DashBoard installed on your computer the following menus are available when interrogating an 9231 card:

MENU	ITEM	DISPLAY	DESCRIPTION
Card Info (Read Only)	Product	9231	Product identification code
	Name	Analog Video Distribution Amplifier	Product functional description
	Supplier	Cobalt Digital Inc.	Manufacturer of the card
	Software Rev.	##	Two digit software revision code
	Web site	www.cobaltdigital.com	Manufacturer's web address

MENU	ITEM	DISPLAY	DESCRIPTION
Card Status (Read Only)	Card Status	Green Dot – Synch detected	Card is functioning properly and appropriate signals are connected
		Red Dot – No synch detected	Video signal is not present

Specifications

Technical Specifications

INPUT

Input Impedance (1)	75 Ohm Or Hi-Z
Input Level	1Vp-p, nominal
Input Return Loss	46dB Typical, @ 3.58M

PERFORMANCE

Response	better than 0.05 dB @ 3.58M
Differential Gain	better than 0.15% @ 3.58M
Differential phase	better than 0.15 deg @ 3.58M
S\N	better than 60dB, 5MHz B.W.

OUTPUT

Output Impedance(8 splits)	75 Ohm
Output level	1Vp-p, terminated

GENERAL

Power Requirements	+12 V,120 mA, -7,5V, 55mA
Dimensions	3.025" high x 12.800" deep
Weight	approx.0.115 kg (0.252 lbs)

Cobalt Digital Inc. reserves the right to change performance specifications without prior notice.

Warranty and Service Information

Warranty and Repair Policy

The openGear 9231 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 openGear 9231 proves to be defective in any way during this warranty period, Cobalt Digital Inc. 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 openGear 9231 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 Cobalt Digital 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 openGear 9231 User Manual provides all pertinent information for the safe installation and operation of your openGear Product. Cobalt Digital policy dictates that all repairs to the openGear 9231 are to be conducted only by an authorized Cobalt Digital factory representative. Therefore, any unauthorized attempt to repair this product, by anyone other than an authorized Cobalt Digital factory representative, will automatically void the warranty. Please contact Cobalt Digital Technical Support for more information.

In Case of Problems

Should any problem arise with your openGear 9231, please contact the Cobalt Digital 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 openGear 9231. 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 Cobalt Digital Inc. will be shipped collect.

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

Ordering Information

Standard Equipment

- **9231** Analog Video Distribution Amplifier w/Differential Input, Clamping and Cable Equalization

Optional Equipment

- **9231-OM** Universal Analog Audio Distribution Amplifier Owner's Manual (additional Owner's Manual)
- **RM-9231-B Rear Module** (Single slot rear module for 8310 frame, 10-BNC)
- **RM20-9231-B Rear Module** (Single slot rear module for 8321 frame, 10-BNC)
- **RM20-9231-A/S Rear Module** (Single slot rear module for 8321 frame, 5-BNC)
- **8310-C** Digital Products Frame and Power Supply with Cooling Fans (2RU, holds up to 10 cards)

Your **9231** Distribution Amplifier is a part of the openGear family of products. Cobalt Digital offers a full line of openGear terminal equipment including distribution, conversion, monitoring, muxing, demuxing and processing of AES/EBU and HD/SD-SDI 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	217 • 344 • 1243
	Fax	217 • 344 • 1245
E-MAIL	General Information	sales@cobaltdigital.com
	Technical Support	support@cobaltdigital.com
POSTAL SERVICE	Cobalt Digital Inc.	2406 E. University Ave. Urbana, IL 61802

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- News

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