

# 9231

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

## Owner's Manual



Cobalt Part Number: 9231  
v.1.3



## 9231 • Analog Video Distribution Amplifier w/ Loop Output

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### Cobalt Digital Part Number: 9231

- V.1.3
- Printed in the USA.

The information contained in this Owner's Manual is subject to change without notice or obligation.

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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.

### 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® 8320 series (or equivalent) frame. Refer to the 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.

Only use attachments/accessories specified by the manufacturer.

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### 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**

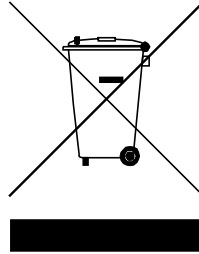
Routine maintenance to this product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the "Contact Us" section on the last page of this manual. See the "Warranty and Repair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

## Functional Block Diagram

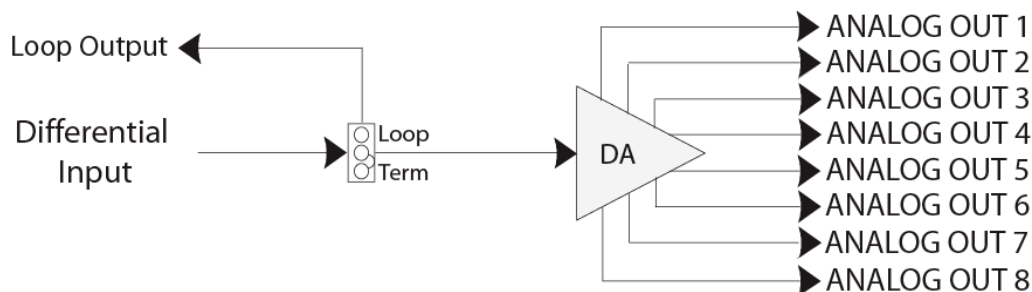


Figure 1. Simplified Block Diagram of the 9231 Functions

## 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® 8320 series (or equivalent) 20-slot frames

## Documentation Terms

The following terms are used throughout this guide:

- **“Frame”** refers to the 20-slot 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.



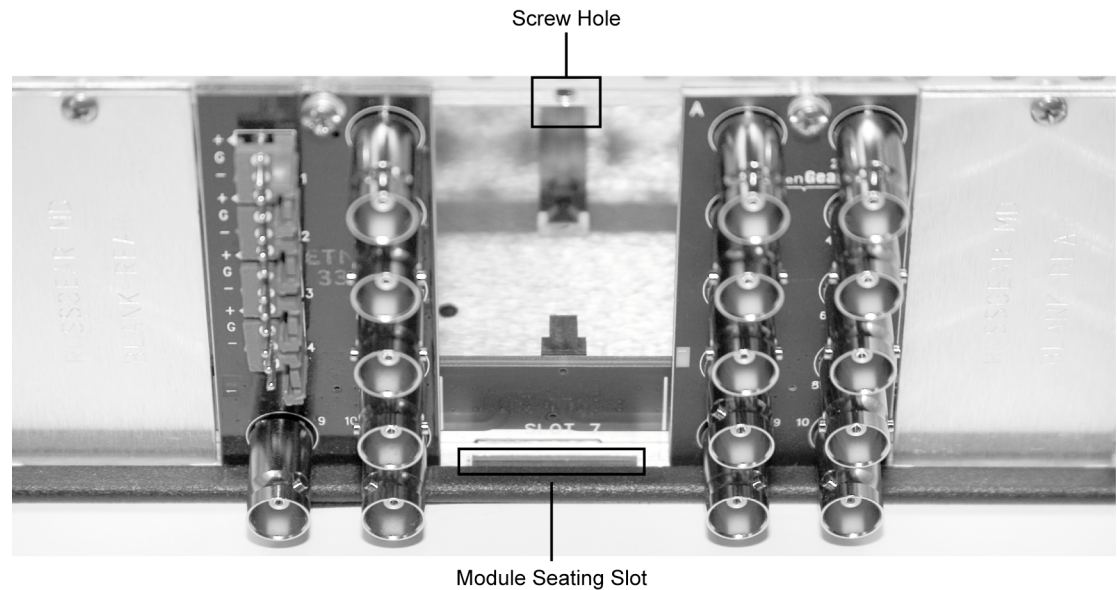
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## Rear Module Installation (Optional)

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 a 20-slot frame before you can connect cables.

Use the following steps to install a rear module in the frame:

1. Refer to the frame Owner's Manual, to ensure that the frame is properly installed according to instructions.
2. On the rear of the frame, 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 frame back plane.
5. Using a Phillips driver and the supplied screw, fasten the rear module to the frame back plane. Do not over tighten.

All modules are installed using the same method above.

## Rear Module Options

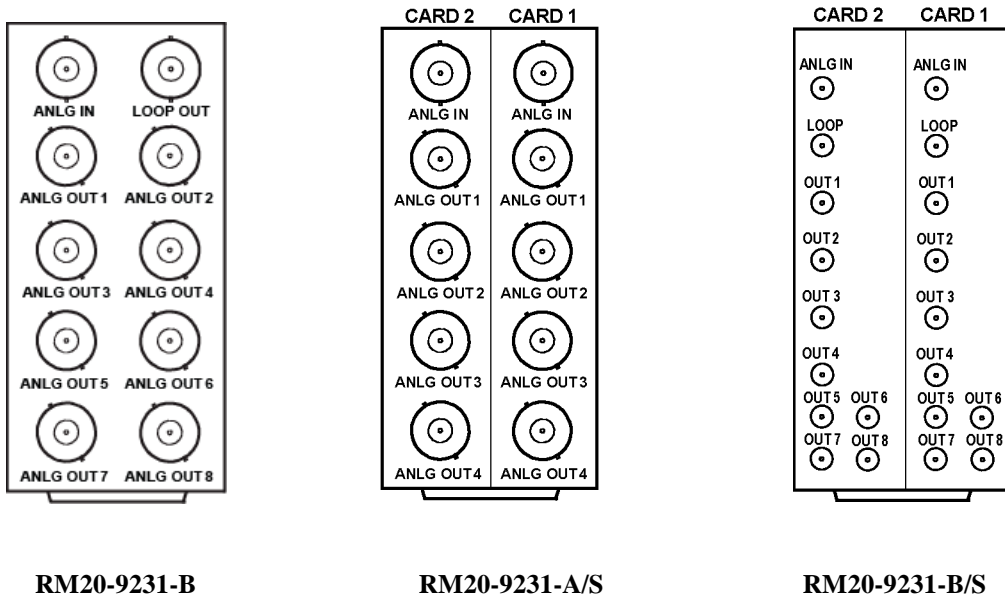



Figure 2. 9231 Rear Modules

	<p><b>COBALT</b> RM20-9001-B/S-DIN</p>	<p>Due to the density of connector placement on Rear Modules using high-density connectors (e.g., RM20-9001-B/S-DIN), these modules use a QR barcode label instead a regular label. Simply scan the image with a smart phone and a link to the rear module label (as shown in our catalog) will appear. (Smart phone must have a QR reader app such as QuickMark QR Code Reader or equivalent.)</p>
<p>**SAMPLE-NOT FOR USE**</p>		<p>Not all devices may be able to acquire the image. If this occurs, use the device to access the web page for card/rear module to view the diagram.</p>

## Board Installation

Use the following procedure to install the 9231 in a 20-slot frame.

1. Refer to the User Manual of the 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 a frame.

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# User Controls

This chapter contains a description of the 9231 user controls:

- LEVEL CONTROLS
- LEDs
- Jumper Settings
- Remote Control

## User Controls

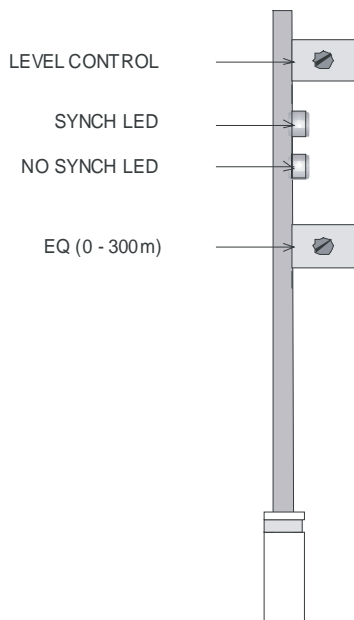


Figure 3. Card-edge User Controls

### 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 floating (unreferenced to GND) and differential GND-referenced input configuration.

ON  OFF  
CLAMP

A horizontal rectangular block containing three circular pins arranged in a row.

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..

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.*

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## Warranty and Repair Policy

This product is warranted to be free from defects in material and workmanship for a period of five (5) years from the date of shipment to the original purchaser, except that 4000, 5000, 6000, 8000 series power supplies, and Dolby® modules (where applicable) are warranted to be free from defects in material and workmanship for a period of one (1) year.

Cobalt Digital Inc.'s ("Cobalt") sole obligation under this warranty shall be limited to, at its option, (i) the repair or (ii) replacement of the product, and the determination of whether a defect is covered under this limited warranty shall be made at the sole discretion of Cobalt.

This limited warranty applies only to the original end-purchaser of the product, and is not assignable or transferrable therefrom. This warranty is limited to defects in material and workmanship, and shall not apply to acts of God, accidents, or negligence on behalf of the purchaser, and shall be voided upon the misuse, abuse, alteration, or modification of the product. Only Cobalt authorized factory representatives are authorized to make repairs to the product, and any unauthorized attempt to repair this product shall immediately void the warranty. Please contact Cobalt Technical Support for more information.

To facilitate the resolution of warranty related issues, Cobalt recommends registering the product by completing and returning a product registration form. In the event of a warrantable defect, the purchaser shall notify Cobalt with a description of the problem, and Cobalt shall provide the purchaser with a Return Material Authorization ("RMA"). For return, defective products should be double boxed, and sufficiently protected, in the original packaging, or equivalent, and shipped to the Cobalt Factory Service Center, postage prepaid and insured for the purchase price. The purchaser should include the RMA number, description of the problem encountered, date purchased, name of dealer purchased from, and serial number with the shipment.

### **Cobalt Digital Inc. Factory Service Center**

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Urbana, IL 61802 USA

Fax: (217) 344-1245

[www.cobaltdigital.com](http://www.cobaltdigital.com)

Email: [info@cobaltdigital.com](mailto:info@cobaltdigital.com)

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# 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)
- **RM20-9231-B Rear Module** (20-slot Frame Rear I/O Module (Standard Width) 1 Video Input BNC, 1 Looped Video Output BNC, 8 Video Output BNCs)
- **RM20-9231-A/S Rear Module** (20-slot Frame Rear I/O Module (Split) 1 Video Input BNC, 4 Video Output BNCs per card)
- **RM20-9231-B/S-HDBNC Rear Module** (20-slot Frame Rear I/O Module (Split) 1 Video Input HDBNC, 1 Looped Video Output HDBNC, 8 Video Outputs HDBNCs per card)
- **RM20-9231-B/S-DIN Rear Module** (20-slot Frame Rear I/O Module (Split) 1 Video Input, 1 Looped Video Output, 8 Video Outputs per card. All connectors DIN 1.0/2.3)
- **HPF-9000-CN** High-Power 20-Slot Frame; 2RU with fans, cover plates for unused slots. Includes one PSU-9000 Power Supply Module and MFC-8320-N Network Controller Card.
- **OG3-FR** 20-Slot Frame and Power Supply with Cooling Fans (2RU, holds 20 cards maximum)

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

<b>PHONE</b>	<b>General Business Office and Technical Support</b>	217 • 344 • 1243
	<b>Fax</b>	217 • 344 • 1245
<b>E-MAIL</b>	<b>General Information</b>	sales@cobaltdigital.com
	<b>Technical Support</b>	support@cobaltdigital.com
<b>POSTAL SERVICE</b>	<b>Cobalt Digital Inc.</b>	2406 E. University Ave. Urbana, IL 61802

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