9251

1x8 AES/EBU Distribution Amplifier-75 Ohm

User Manual

COBALT

open**Gear**

CDI Part Number: 9251
V.1.1

9251 • 1 x 8 AES/EBU Distribution Amplifier-75 Ohm, User Manual

- Cobalt Digital Part Number: 9251
- Document Version: 1.1
- Printed in the USA.

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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 Systems 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 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.

OpenGear® is a registered trademark of Ross Video Limited.

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.
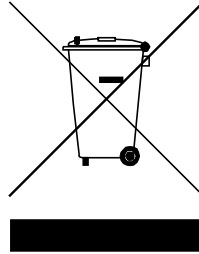
If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration.

Introduction

This chapter contains the following sections:

- Overview
- Functional Block Diagram
- Features
- Documentation Terms

Overview

The 9251 is an AES/EBU distribution amplifier designed for broadcast use. It provides eight copies of the incoming signal.

The 9251 supports audio sampling frequencies from 30kHz to 192 kHz. Cable equalization and reclocking techniques enable the 9251 to recover the incoming digital audio signal reliably.

Functional Block Diagram

9251 - AES Distribution Amplifier
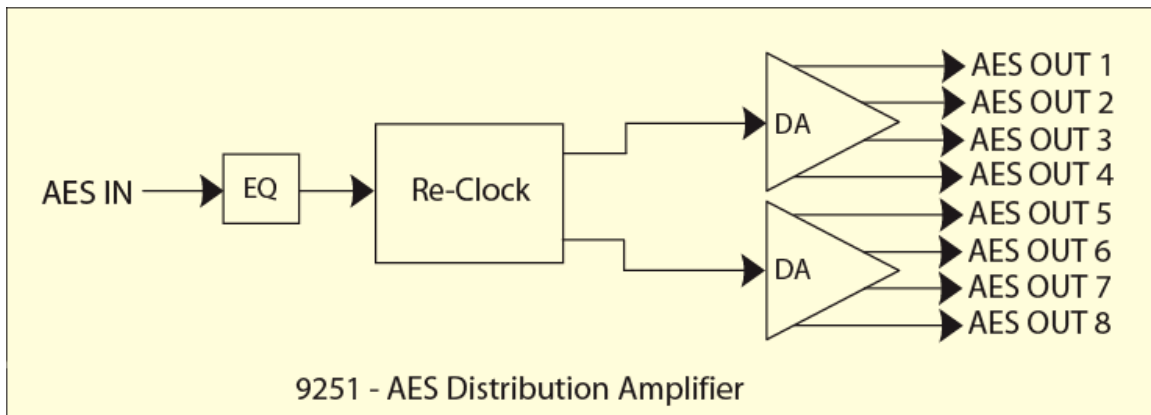
Features

The following features make the 9251 the best solution for digital audio distribution.

- Cable equalization and data reclocking on the incoming AES/EBU signal

- Supports audio sampling frequencies from 30kHz to 192 kHz

- 5 year warranty

Documentation Terms

The following terms are used throughout this guide:

- "**Frame**" refers to the frame that houses the **9251** card.

- "**Operator**" and "**User**" refer to the person who uses the **9251**.

- "**Board**", and "**Card**" refer to the **9251** 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 9251 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 9251 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

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

1. Refer to the frame product manual to ensure that the frame is properly installed according to instructions.

2. On the rear of the frame, locate the card frame slot.

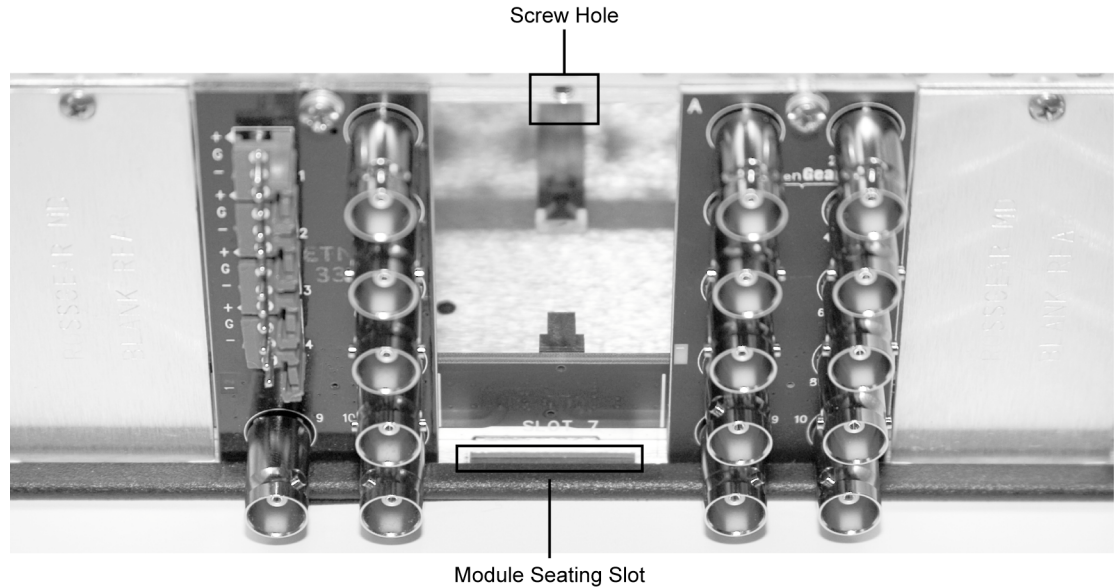3. As shown in Figure 2, seat the bottom of the rear module in the seating slot at the base of the frame's back plane.

Screw Hole

Module Seating Slot

Figure 2. Rear Module Installation

4. Align the top hole of the RM-9251-A 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.

The following section contains a drawing of the RM-9251-A module.

Rear Module Options
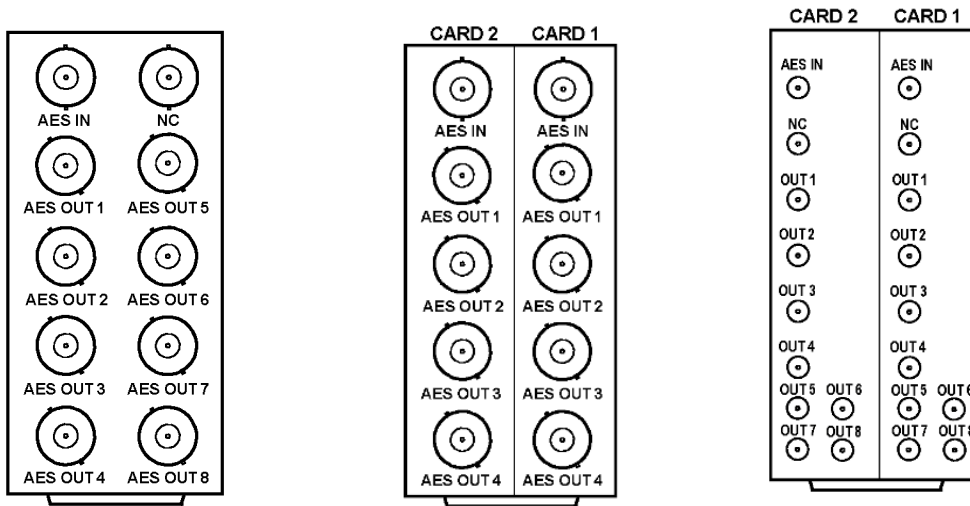
RM20-9251-A **RM20-9251-A/S** **RM20-9251-B/S**

The rear modules shown below provides the input/output connections shown. Split rear modules (/S) provide connections for two cards in adjacent slots using one rear module. RM20-9251-B/S is available in HD-BNC and DIN1.0/2.3 versions.

Note: The RM20-9251-A/S and RM20-9251-B/S rear modules are usable only with the 20-slot frame. RM20-9251-A rear module available for 8310-series (10-slot frame) as part number RM-9251-A.

Figure 3. Rear Modules

Board Installation

Use the following procedure to install the 9251 in the 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 9251 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 9251 in the frame.

User Controls

This chapter contains a description of the 9251 user controls:

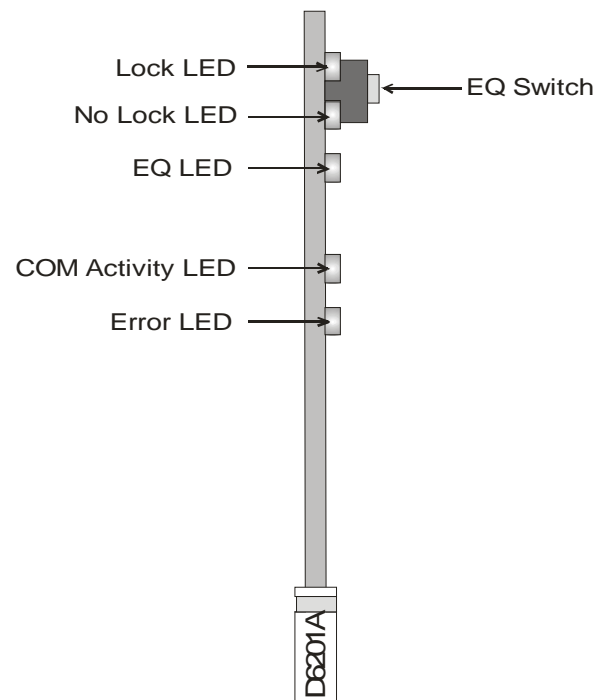- EQ Switch

- LEDs

.

User Controls

Lock LED ——→

No Lock LED ——→   ◄— EQ Switch

EQ LED ——→

COM Activity LED ——→

Error LED ——→

D6201A

Figure 3. Card-edge User Controls

EQ Switch — SW1

The **EQ Switch** (**SW1)** is used to insert the cable equalizer into the incoming AES/EBU signal. The 9251 can recover digital audio signals conforming to AES/EBU specifications and transmitted over 75ohm, coaxial cable, up to 600 metres (2000 ft) long without equalization. For cable lengths in excess of 600 metres, we recommend that the input equalization be activated. Note that switching the EQ in and out can cause audible artefacts.

- Pressing the EQ Switch SW1 will activate the yellow EQ LED to indicate this feature is activated.

- While the EQ Switch SW1 is activated pressing it again will disable the EQ and the yellow EQ LED will go off.

LEDs

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

As selections are made in the menus, (refer the subsequent chapter for complete menu descriptions), the LEDs display the status of the input signals. Descriptions are provided in the following table:

LED	Color	Location	Display and Description
Lock	Green	Top of the card	When illuminated there is a valid AES/EBU signal at the input.
No Lock	Red	Second from the top	When illuminated a valid AES/EBU signal is not present
EQ	Yellow	Third from the top	When illuminated this indicates that the cable EQ has been inserted by pressing SW1 or that feature has been enabled through Dashboard.
Com Activity	Green	Fourth from the top	When illuminated this indicates that the 9251 is communicating to Dashboard through the CAN bus.
Error	Red	Fifth from the top	When illuminated this indicates that there is an error in the communications to Dashboard through the CAN bus.

Table 1. Status LED Descriptions

Specifications

Technical Specifications

DIGITAL INPUT

Resolution	24 Bit
Input Level	0.2-7 Vp-p
Input Impedance (transformer balanced)	75Ω,110 Ω, HiZ
Sampling Frequency Range	30 kHz to 192 kHz

DIGITAL OUTPUT

Resolution	24 Bit
Output Level	1 V p-p nominal
Output Impedance	75Ω unbalanced
Sampling Frequency Range	30 kHz to 192 kHz
Jitter	Less than 5 ns

GENERAL

Power Requirements	+12 V, 4Watts, MAX
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

Cobalt Digital Inc. Limited Warranty

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

2406 E. University Avenue	Office: (217) 344-1243
Urbana, IL 61802 USA	Fax: (217) 344-1245
www.cobaltdigital.com	Email: info@cobaltdigital.com

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In Case of Problems

Should any problem arise with your 9251, 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 9251. 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 Inc., beyond the warranty period without charge, for the life of the equipment.

Ordering Information

Standard Equipment

- **9251** AES/EBU Distribution Amplifier 75 Ohm

Optional Equipment

- **9251-OM** AES/EBU Distribution Amplifier 75 Ohm Owner's Manual (additional Owner's Manual)

- **RM20-9251-A Rear Module** 20-Slot Frame Rear I/O Module (Standard Width) 1 AES Input BNC, 8 AES Output BNCs

- **RM20-9251-A/S Rear Module** 20-Slot Frame Rear I/O Module (Split) 1 AES Input BNC, 4 AES Output BNCs (per card)

- **RM20-9251-B/S-HDBNC Rear Module** 20-Slot Frame Rear I/O Module (Split, High-Density) 1 AES Input, 8 AES Outputs (all connectors HD-BNC)

- **RM20-9251-B/S-DIN Rear Module** 20-Slot Frame Rear I/O Module (Split, High-Density) 1 AES Input, 8 AES Outputs (all connectors DIN1.0/2.3)

Your **9251** 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**	request@cobaltdigital.com
	Technical Support	request@cobaltdigital.com
POSTAL SERVICE	**Cobalt Digital Inc.**	2406 E. University Ave. Urbana, IL 61802 USA

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