

Instruction Manual

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8911

AES/EBU RECLOCKING DISTRIBUTION AMPLIFIER

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Preface

About This Manual

This manual describes the features of a specific module of the 8900 Series Distribution Amplifier family. As part of this module family, it is subject to Safety and Regulatory Compliance described in the 8900 Series frame and power supply documentation (see the *8900 Series User's Guide*).

8911 AES/EBU Reclocking Distribution Amplifier

Introduction

The 8911 module is a digital audio 1x8 distribution amplifier that provides reclocking of the digital signal. The amount of digital audio is ever increasing as studios and broadcast facilities transition to digital transmission. The 8911 offers a low cost method of reclocking AES/EBU digital audio signals. Reclocking reduces the signal jitter resulting from numerous passes through other equipment such as audio routers and switchers. The 8911 fits into the 8900 series frames which offer passive loop-through inputs, high density and a wide range of distribution and format conversion functions.

The 8900 Series product line is a family of serial digital distribution amplifiers (DAs) and signal processors that reside in a 2 rack unit frame which accommodates up to ten modules. A variety of modules are available that can provide fanout, timing / reclocking, monitoring, or error detection and handling capabilities. Modules are selected by the user to suit their particular requirements.

The 8911 distribution amplifier provides:

- Signal reclocking to reduce jitter,
- Support of 32, 44.1 and 48 KHz sample rates,
- Eight outputs for ample distribution,
- Loop-through input enabling redundant system design,
- Accepts input cable lengths of up to 1000m (Belden 8281 or equivalent), and
- Ten module capacity in a 2 rack unit 8900 frame.

Functional Description

The 8911 has one loop-through, high impedance input and produces eight 75-Ohm outputs. The AES/EBU data is reclocked by means of a phase-locked-loop. Refer to [Figure 1](#) while reading the following description.

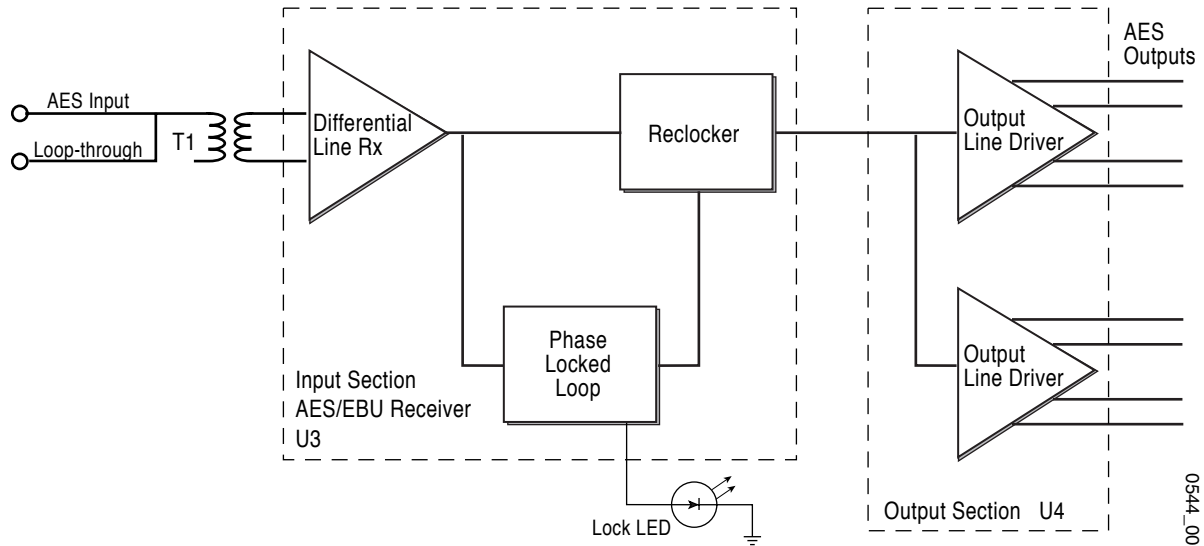


Figure 1. 8911 AES/EBU Reclocking DA Block Diagram

Input Section

The input channel is loop-through and is not terminated (the differential input is high impedance). The input signal comes from the 50-pin connector, P1, and feeds a transformer, T1. Transformer coupling on the input eliminates common mode noise. The output side of the transformer feeds the differential line receiver of AES/EBU receiver U3.

The AES/EBU receiver reclocks the data for its AES/EBU data stream. The mode pins 17, 18, 23 and 24 are set to pass the entire AES3 signal with the preamble. The receiver has an incoming audio sample frequency range of 25 KHz to 55 KHz.

Output Section

After it is reclocked, the serial data is routed to a quad EIA-485 line driver, U4. The line driver chip drives eight output lines.

The outputs feed a resistive network that performs three functions:

- Attenuates the signal to become 1 volt peak-to-peak,
- Creates a 75Ω output resistance matching the cable impedance, and
- Limits the rise and fall times to meet the AES/EBU specification.

Linear Regulator

The voltage regulator is a monolithic integrated circuit with a fixed voltage output of +5 volts. This regulator employs internal current limiting and thermal shutdown.

Specifications

Table 1. 8911 Specifications

Parameter	Value
Input	
Number	1 loopthrough
Signal type	AES/EBU digital audio, per AES3id:1995 and SMPTE 276M
Connector	75Ω BNC
Return loss	>25 dB, 0.1 to 6 MHz
Outputs	
Number	8 reclocked
Signal type	AES/EBU digital audio, per AES3id:1995 and SMPTE 276M
Connector	75Ω BNC
Return loss	>25 dB, 0.1 to 6 MHz
Performance	
Sample Rates	48KHz, 44.1KHz, and 32KHz (Automatic selection)
Environmental	
Operating temperature range	0 to 45° C, noncondensing
Non-operating temperature range	-10 to +70° C, noncondensing
Power Requirements	
Supply Voltage	+12 Volts
Power dissipation	3 Watts
Physical	
Frame	Resides in standard 2 rack unit 8900 Series frame

Module Installation

There are ten cell locations in the frame to accommodate either analog or digital modules. These are the left ten slots. Refer to [Figure 2](#).

The two cells on the right are allocated for the power supplies. For additional information concerning the Power Supply module, refer to the Power Supply manual.

The third cell from the right is allocated for the Controller module. This module provides the interface for the forced air cover, as well as the SMPTE 269M fault reporting (health alarm). For additional information concerning the Controller module, refer to the Controller manual.

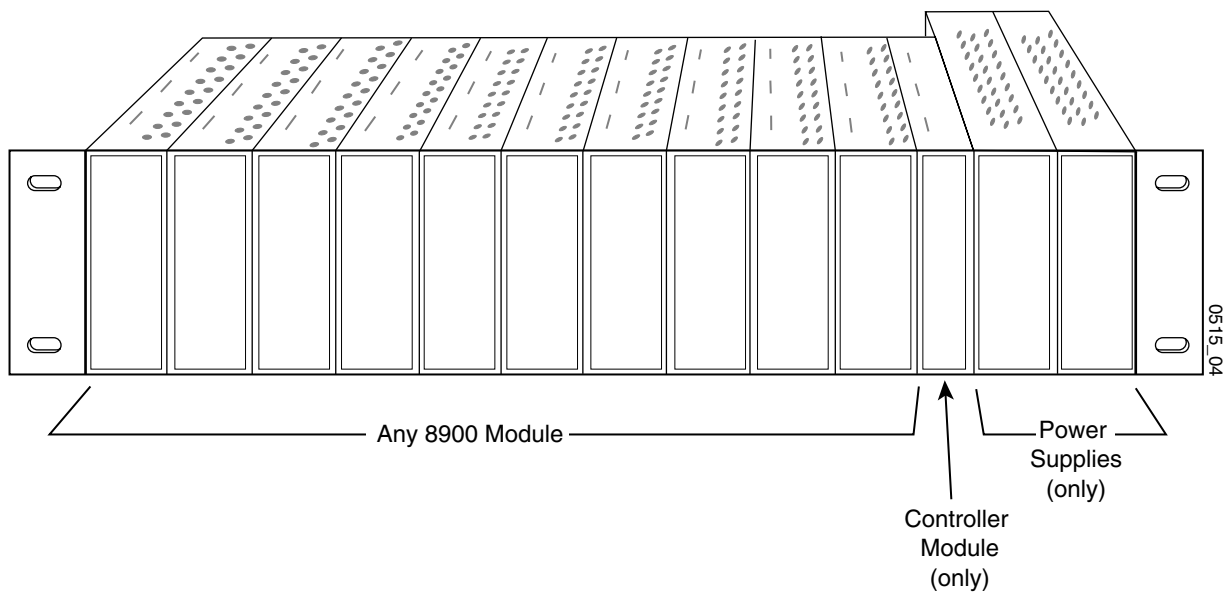


Figure 2. 8900 Series Frame

To install a module into the frame, follow these steps:

1. Insert the module into the frame, connector end first, with component side of the module facing to the right and ejector tab to the top.
2. Verify that the module connector seats properly against the backplane.
3. Press the ejector tab in to seat the module in place.

Cabling

8900 module are interchangeable within the frame slots. The maximum number of modules the frame will accept is ten. [Figure 3](#) illustrates the rear connector plate for an 8900 Series frame.

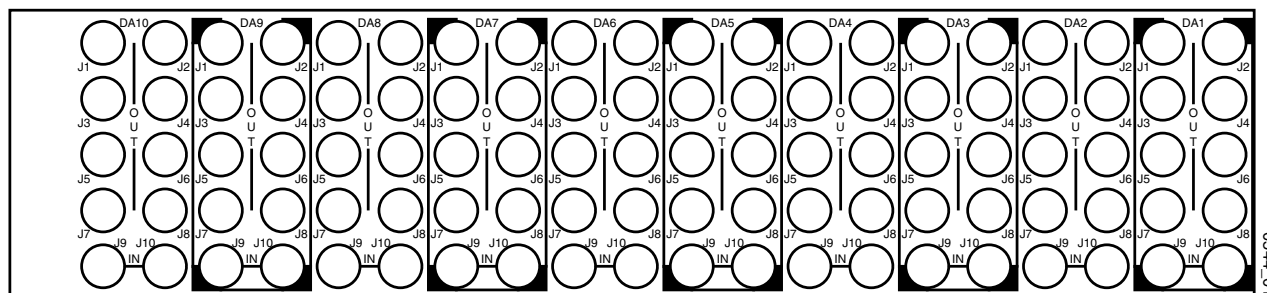


Figure 3. 8900 Series Frame Rear Connector

Note Input/Output mapping of the rear connector configuration is provided in a silk-screened representation on the top side of the 8911 module.

Loophrough Input

Connect an input source to one of the loopholethrough input connectors, J9 or J10 (See [Figure 4](#)). Terminate the unused connector into 75Ω.

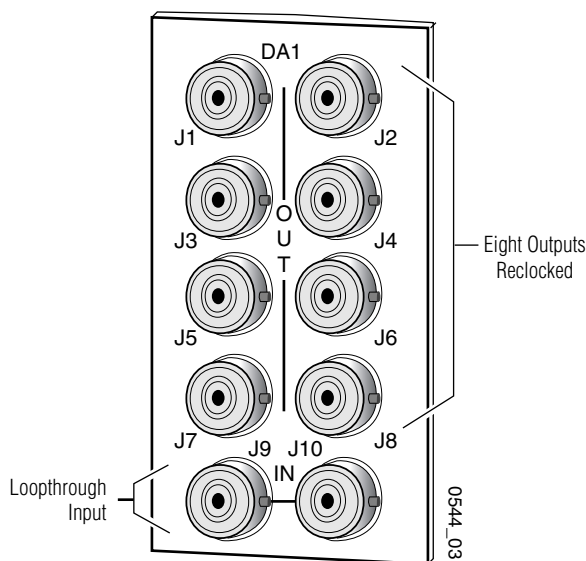


Figure 4. Typical Module Input and Outputs

Outputs

There are eight identical outputs for the 8911 module—J1 through J8. The destination equipment should have an input impedance of 75 Ω unless it has loopthrough inputs, in which case the unused loopthrough connector must be terminated into 75 Ω .

Testpoints and Indicators

The 8911 DA has ground and +5V testpoints easily accessible on the front edge of the module (see [Figure 5](#)).

Between the testpoints is a green Power On LED.

The Lock LED on the front of the module is on when the reclocking chip has locked on the incoming AES/EBU signal.

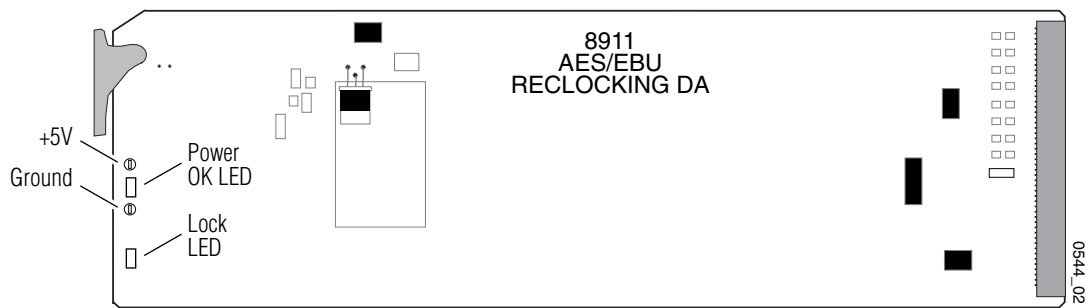


Figure 5. 8911 Testpoints and Indicators

Service

The 8911 modules make extensive use of surface-mount technology and programmed parts to achieve compact size and adherence to demanding technical specifications. Circuit modules should not be serviced in the field.

If your module is not operating correctly, proceed as follows:

- Check frame and module power and signal present LED
- Check input signals
- Check cables and connections
- Verify that source equipment is operating correctly
- Check output connections

Refer to [Figure 5](#) for supply voltage test points on the 8911 module.

If the module is still not operating correctly, replace it with a known good spare and return the faulty module to a designated Grass Valley repair depot. Call your Grass Valley representative for depot location.

Refer to the [Contacting Grass Valley Group](#) at the front of this document for the Grass Valley Customer Service Information number.

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