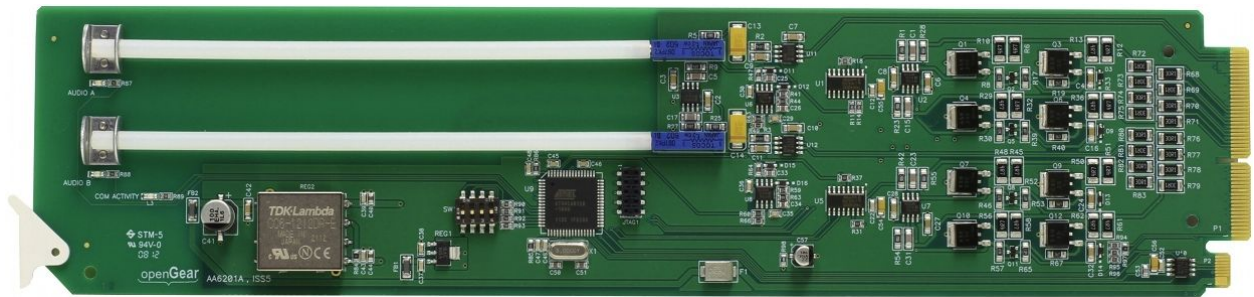


AA6201A

OPENGear UNIVERSAL ANALOG AUDIO DISTRIBUTION AMPLIFIER

User Manual



By Ward-Beck Systems

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Ward-Beck Part Number: AA6201A

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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.

Symbols 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 Ward-Beck 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 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

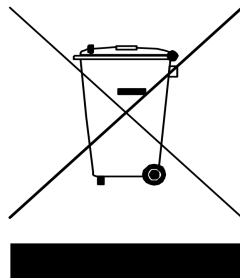
Routine maintenance to this openGear product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the "Contact Us" section on the last page of this manual. All openGear products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

Overview

The AA6201A is an analog audio distribution amplifier designed for broadcast use. It can be used as either a mono or two channel (stereo) audio DA. When used as a mono DA it can provide eight copies of the single (mono) input signal or four copies each of the two (stereo) inputs. For maximum output capability, the T6303A rear assembly is used. For high density installations the AA6201A can be used with the T6403A rear assembly to provide up to 20 1 x 4 mono audio DAs in the OG3-FR-C series frame. For ultra high stereo capacity, when used with the T6406A rear assembly in the OG3-FR-C series frame, the AA6201A is capable of providing two 1 x 3 stereo audio DA's per slot providing the equivalent 40 analog audio DA's in a 2 RU frame. The AA6201A can be addressed through Dashboard to report card status. The AA6201A is housed in the openGear OG3-FR-C series frames.

Functional Block Diagram

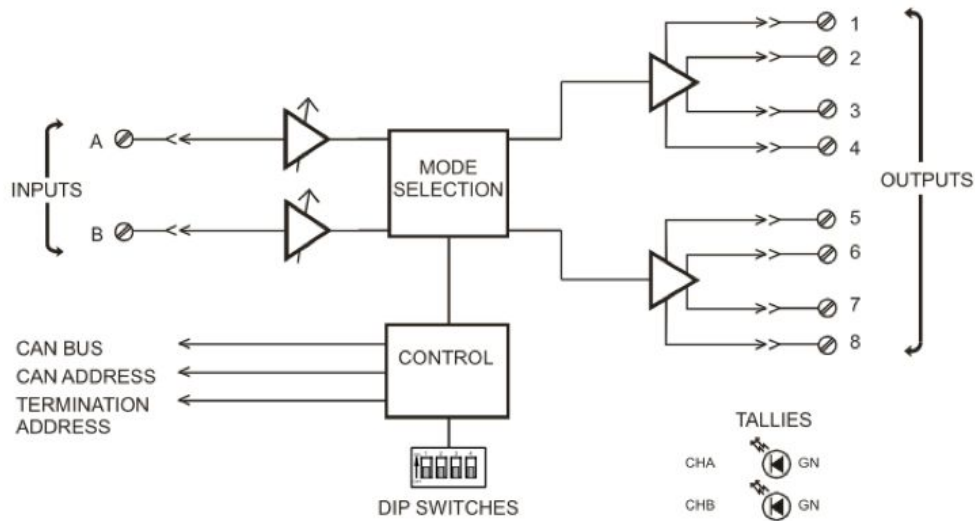


Figure 1. Simplified Block Diagram of the AA6201A Functions

Features

The following features make the AA6201A the best solution for digital audio distribution.

- Handles mono or stereo signals
- Has summing capability
- Silence detection
- Higher density, with up to 20 cards in an OG3-FR-C frame
- 5 year warranty
- Fits openGear all OG3-FR-C series frames

Documentation Terms

The following terms are used throughout this guide:

- “**Frame**” refers to the **OG3-FR-C series** frame that houses the **AA6201A** card.
- “**Operator**” and “**User**” refer to the person who uses the **AA6201A**.
- “**Board**”, and “**Card**” refer to the **AA6201A** card itself, including all components and switches.

Installation and Setup

Static Discharge

Whenever handling the AA6201A and other related equipment, please observe all static discharge precautions as described in the following note:



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.

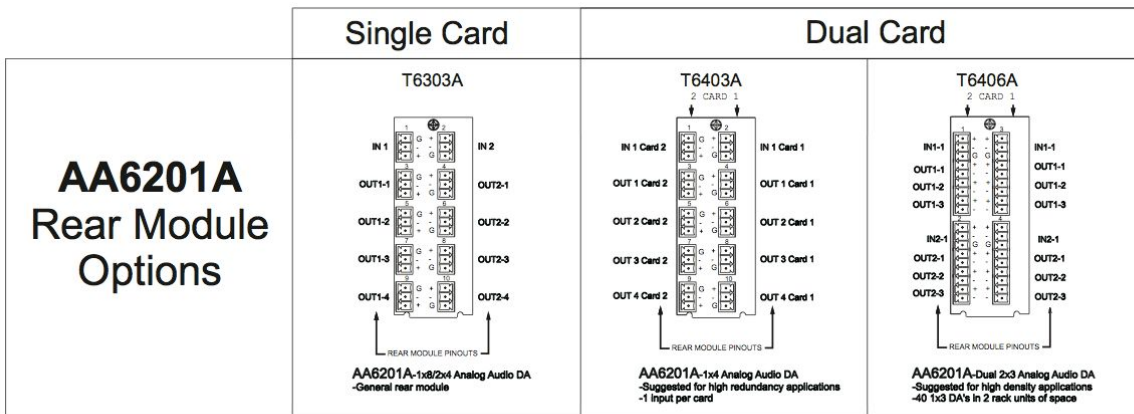
Unpacking

Unpack each AA6201A 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 Ward-Beck Systems Ltd. directly.

Rear Module Options

There are three rear module options available for the AA6201A Analog Audio distribution amplifier.

On the 20 slot **OG3-FR-C** frame, the T6303A rear module occupies two slots and provides I/O for one AA6201A card. For higher density applications, the T6403A or T6406A rear module occupies two slots and provides I/O for two AA6201A cards. All connections are made on Phoenix type screw terminal connectors.



*WBS uses Phoenix Contact Pluggable Screw type connectors.

*The male portion is included with the purchase of rear module, but has not been drawn

Figure 2. Rear Module Terminations

NOTE: The T6203A (obsolete) was designed for use exclusively with the 10 slot **DFR-8310** frame and has the same connection scheme as the T6303A.

Board Installation

Use the following procedure to install the AA6201A in an openGear OG3-FR-C series frame.

1. Refer to the User Manual of the openGear OG3-FR-C series frame to ensure that the frame is properly installed according to instructions.
2. When using the AA6201A with the T6303A for maximum I/O, please note that the even numbered slots are to be used. Plug the AA6201A modules into slots 2,4,6,8,10,12,14,16,18, and 20 for a maximum of 10 cards. Slot 1 is the leftmost slot as you look into the frame from the front.
3. When using the AA6201A with the T6403A or T6406A for maximum density, you may insert the card into any slot for up to 20 cards per frame.
4. After selecting the desired frame installation slot, hold the AA6201A 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 AA6201A in an openGear OG3-FR-C Series frame.

User Controls

User Control Diagram

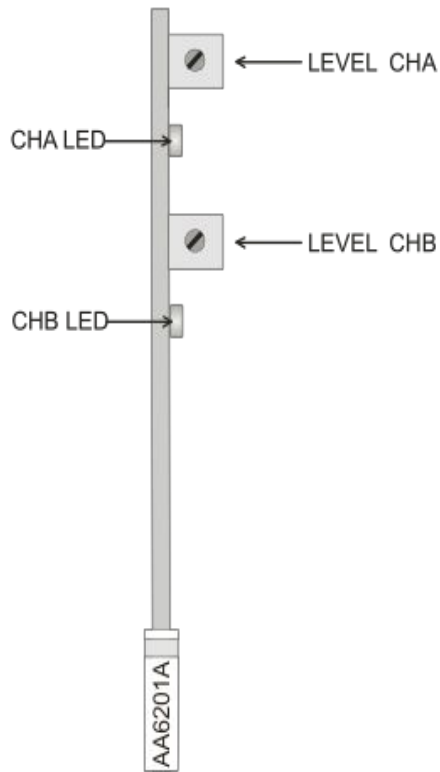


Figure 3. Simplified Block Diagram of the AA6201A Functions

Level Controls (Channel A/Channel B)

The level controls are used to adjust the output levels of the AA6201A. When using the AA6201A as a mono DA, CHA level control is used. When using the card as a stereo DA, both CHA and CHB controls are used. These ten turn potentiometers give precise control of the output signal over a 30 dB range.

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
CHA	Green	Top of the card	When illuminated there is a valid analog signal at the input.
CHB	Green	Second from the top	When illuminated there is a valid analog signal at the input.
COM	Green	Third from the top	Reserved

Table 1. Status LED Descriptions

DIP Switch Settings

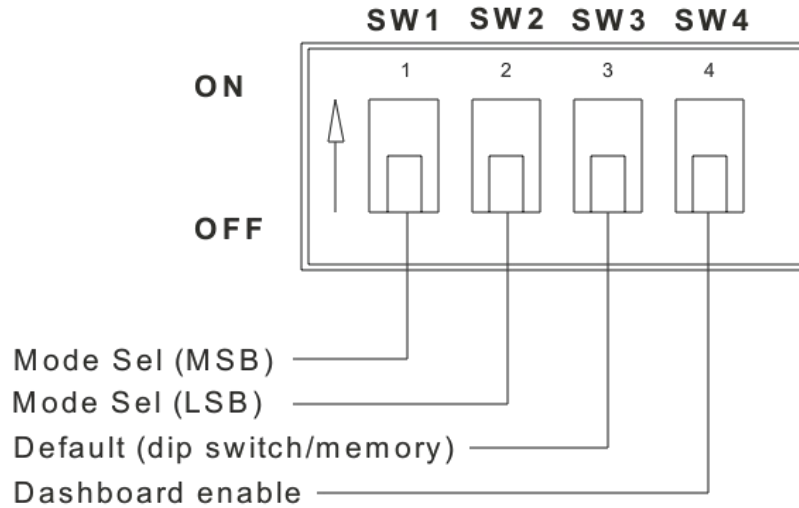


Figure 4. DIP Switch Controls

Mode Select

#	Model Sel (MSB)	Mode Sel (LSB)	Mode
1	OFF	OFF	Stereo DA (Dual 1 x 4)
2	OFF	ON	Mono Mix (Sum Inputs 1 and 2)
3	ON	OFF	Mono DA (1 x 8)
4	ON	ON	Reserved

Default (power up default parameter settings)

- ON Get card parameters from non volatile memory, ignore dip switch settings. (Configurable with Dashboard Control system)
- OFF Get card parameters from the DIP switch

Dashboard Enable

- ON Only card status is available on Dashboard; users are prevented from changing parameters
- OFF Normal operation; users have full access to the cards parameters

Remote Control

DashBoard Control

This card may be monitored or controlled 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 AA6201A card:

MENU	ITEM	DISPLAY	DESCRIPTION
Card Info (Read only)	Product	AA6201A	Product identification code
	Name	Analog Audio Distribution Amplifier	Product functional description
	Supplier	Ward-Beck Systems Ltd.	Manufacturer of the card
	Software Rev.	##	Two digit software revision code
	Web site	www.ward-beck.com	Manufacturer's web address

MENU	ITEM	DISPLAY	DESCRIPTION
Card Status (Read only)	Card Status	Green Dot - OK	Card is functioning properly and appropriate signals are connected
		Red Dot - Silence Detected (CH A, CH B or both)	Audio signal is not present
	Input CH A	Audio detected	Audio signal is present
		Silence detected	Audio signal is not present
	Input CH A	Audio detected	Audio signal is present
		Silence detected	Audio signal is not present

MENU	ITEM	DROP DOWN SELECTION	DESCRIPTION
Card Settings (Drop down selection)	Mode	Stereo DA (Dual 1 x 4)	Functions as a stereo DA. Signals must be connected to both inputs
		Mono Mix ((CH A + CH B)/2)	Functions as a summing DA. Signals must be connected to both inputs
		Mono DA (CH A - 1 x 8)	Functions as a mono DA. Input signal connected to CH A

MENU	ITEM	DROP DOWN SELECTION	DESCRIPTION
Card Settings (Drop down selection)	Silence Detection Time Interval	Range from OFF to 45 seconds in 5 second intervals	Sets the time interval allowed for no signal present or signal below threshold before alarm is activated The default is OFF. When OFF the alarm is disabled.
	Silence Detection Threshold (dBu)	-20, -30, -40 dBu	Sets the threshold below which the signal is considered lost. The default is -30 dBu

NOTE: Once the card settings are set, click the SAVE button to save the set-up for that card.

Technical Specifications

INPUT

Input Impedance	Greater than 20 kOhms, balanced
Common Mode Rejection	Greater than 70dB, 20 Hz to 20 kHz
Maximum Input Level	+27.5 dBu

PERFORMANCE

Gain	-14dB to +18dB continuously variable
Frequency Response	± 0.1 dB from 20Hz to 20kHz
Noise	Better than -95 dBu, 20Hz to 20kHz at unity gain
Harmonic Distortion	Less than 0.01%
Inter-channel Crosstalk	Better than -90 dBu, 20 Hz to 20 kHz

OUTPUT

Maximum Output Level	+26 dBu
Output Impedance	60 Ohm balanced
Output Isolation	Greater than 60dB

GENERAL

Power Requirements	+12V, 215 mA idling
Dimensions	3.025" high x 12.800" deep
Weight	approx. 0.115kg (0.252 lbs)
Operating Temperature	0 to 40 degrees Celsius

NOTE: Ward-Beck Systems Ltd. reserves the right to change performance specifications without prior notice.

Warranty and Repair Policy

The openGear AA6201A 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 AA6201A proves to be defective in any way during this warranty period, Ward-Beck Systems Ltd. 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 AA6201A 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 Ward-Beck Systems 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 AA6201A User Manual provides all pertinent information for the safe installation and operation of your openGear Product. Ward-Beck policy dictates that all repairs to the openGear AA6201A are to be conducted only by an authorized Ward-Beck Systems factory representative. Therefore, any unauthorized attempt to repair this product, by anyone other than an authorized Ward-Beck Systems factory representative, will automatically void the warranty. Please contact Ward-Beck Technical Support for more information.

In Case of Problems

Should any problem arise with your openGear AA6201A, please contact the Ward-Beck 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 AA6201A. 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 Ward-Beck Systems Ltd. will be shipped collect.

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

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Ordering Information

Standard Equipment

- AA6201A Universal Analog Audio Distribution Amplifier

Optional Equipment

- AA6201AUM Universal Analog Audio Distribution Amplifier User Manual (additional User Manual)
- T6303A Single Card Rear Module (for installation into OG3-FR-C frame for maximum I/O)
- T6403A Dual Card Rear Module (for installation into OG3-FR-C frame for maximum mono density)
- T6406A Dual Card Rear Module (for installation into OG3-FR-C frame for maximum stereo density)
- OG3-FR-C Digital Products Frame and Power Supply with Cooling Fans (2RU, holds up to 20 cards)

Your AA6201A Distribution Amplifier is a part of the openGear family of products. Ward-Beck 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.