

D6207A

DolbyE/AC3 Decoder User Manual



Number: D6207A

Issue: 1

D6207A • DolbyE/AC3 Decoder User Manual

- Ward-Beck Part Number: D6207A
- Document Issue: v1.01
- Printed in Canada.

The information contained in this User Manual is subject to change without notice or obligation.

Copyright

© 2008 Ward-Beck Systems Ltd. All rights reserved.

Contents of this publication may not be reproduced in any form without the written permission of Ward-Beck Systems Ltd. Reproduction or reverse engineering of copyrighted software is prohibited.

Notice

The material in this manual is furnished for informational use only. It is subject to change without notice and should not be construed as a commitment by Ward-Beck Systems Ltd. Ward-Beck Systems Ltd. assumes no responsibility or liability for errors or inaccuracies that may appear in this manual.

Trademarks



is a registered trademark of Ross Video Limited.



is a registered trademark of Ward-Beck Systems Ltd.

- All other product names and any registered and unregistered trademarks mentioned in this manual are used for identification purposes only and remain the exclusive property of their respective owners.

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 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

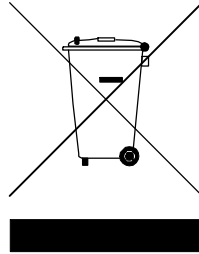
Routine maintenance to this openGear product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the "Contact Us" section on the last page of this manual. All openGear products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

This chapter contains the following sections:

- Overview
- Functional Block Diagram
- Features
- Documentation Terms

Overview

The D6207A is a DolbyE/AC3 decoder with SRC designed for broadcast use. It takes a Dolby encoded signal and breaks it down into it's discrete channels, which are presented at it's output as AES signal streams. It also extracts the Metadata embedded within the input signal and presents this on the output termination.

Please note the following:

The D6207A card accepts any AES signal at it's input. The signal may be Dolby E or AC-3 encoded or PCM. If the signal is Dolby E the card will output the decoded AES pairs as (L,R) (C,LFE) (Ls,Rs) (SAP, if present) (Lo,Ro or Lt,Rt, depending on selection) and Metadata. If the signal is AC-3 the card will output the decoded AES pairs as (L,R) (C,LFE) (Ls,Rs) (Lo,Ro or Lt,Rt, depending on selection). AC-3 does not contain Metadata. If the input is PCM the D6207A will provide an output on (L,R) and (Lo, Ro/Lt, Rt) as well as on the input loop all other outputs will be muted.

The D6207A supports audio sampling frequencies from 32kHz to 48 kHz.

The D6207A is housed in the openGear DFR-8300 series frames.

Functional Block Diagram

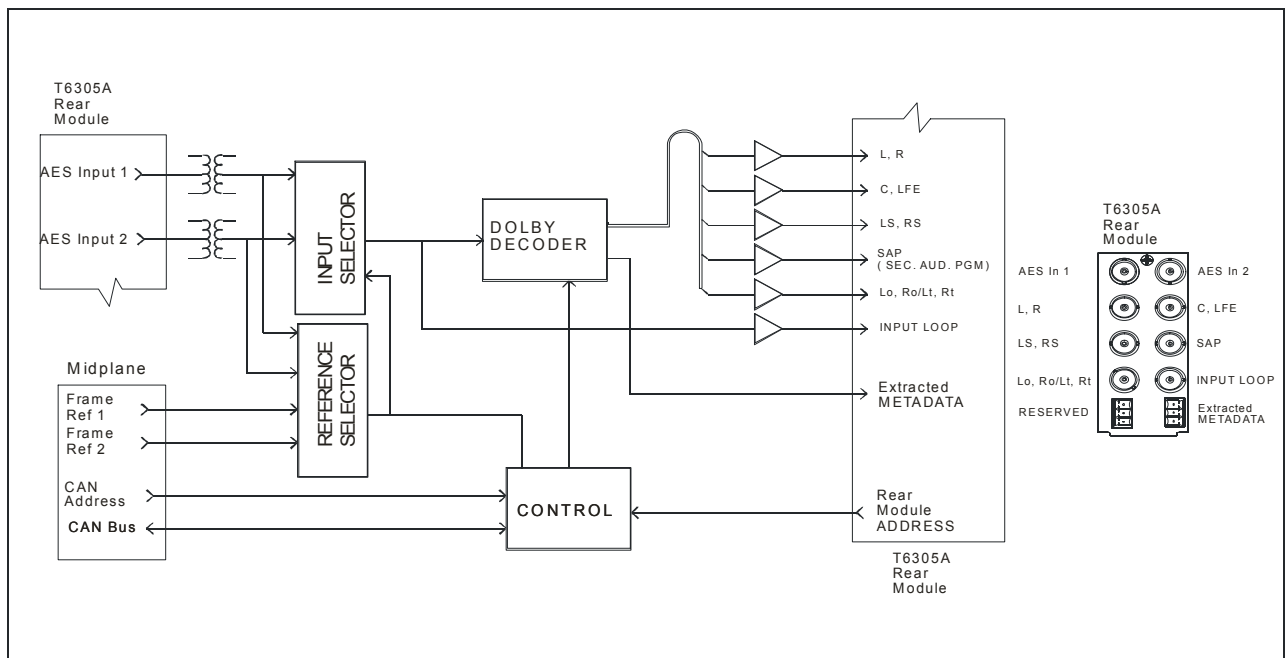


Figure 1. Simplified Block Diagram of the D6207A Functions

Features

The following features make the D6207A the best solution for Dolby decoding

- Handles Dolby E and AC-3 signals
- 24 bit technology
- Supports audio sampling frequency up to 48 kHz
- Higher density with up to 10 cards in a DFR-8320 frame
- 5 year warranty
- Fits openGear DFR-8300 series frames

Documentation Terms

The following terms are used throughout this guide:

- “**Frame**” refers to the **DFR-8310** or the **DFR-8320** frame that houses the **D6207A** card.
- “**Operator**” and “**User**” refer to the person who uses the **D6207A**.
- “**Board**”, and “**Card**” refer to the **D6207A** 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 D6207A 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 D6207A 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

T6305A is the rear module designed to be used with the D6207A Dolby E/AC3 decoder.

The T6305A rear module occupies two slots and provides I/O for one D6207A card. The T6305A provides two 75 Ohm AES inputs for the main signal and external reference signal as well as six 75 Ohm AES/EBU outputs and two 3 pin Phoenix terminal block connectors. One 3-pin connector is the metadata output while the second connector is reserved for future control/tally options.

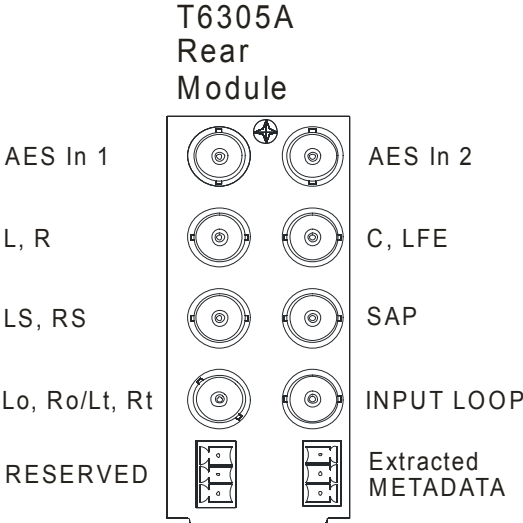


Figure 2. Rear Module

Board Installation

Use the following procedure to install the D6207A in an openGear DFR-8300 Series frame.

1. Refer to the User Manual of the openGear DFR-8300 series frame to ensure that the frame is properly installed according to instructions.
2. The D6207A plugs in to the even numbered slots. Plug the D6207A modules into slots 2,4,6,8,10,12,14,16,18, and 20 for a maximum of 10 cards. Slot 1 is the left most slot as you look into the frame from the front.
3. After selecting the desired frame installation slot mount the T6305A termination assembly on the rear by sliding the locating tabs into the bottom plate and tightening the locking screw.
4. Hold the D6207A 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 D6207A in an openGear DFR-8300 Series frame.

User Controls

This chapter contains a description of the D6207A user controls:

- LEDs
- DIP Switch Settings

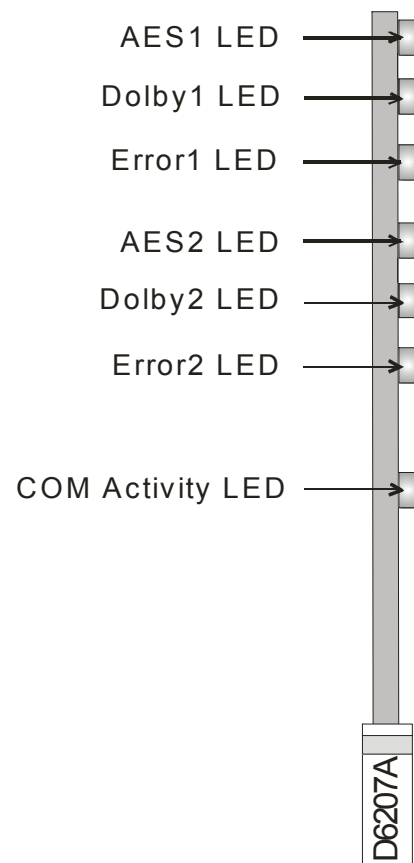


Figure 3. Card-edge User Controls

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 to 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
AES 1	Green	Top of the card	When illuminated this indicates there is a valid AES/EBU signal at input 1.
Dolby 1	Yellow	Second from the top	When illuminated a Dolby signal is detected at input 1.
Error 1	Red	Third from the top	When illuminated this indicates that signal is missing or corrupted.
AES 2	Green	Fourth from the top	When illuminated this indicates there is a valid AES/EBU signal at input 2.
Dolby2	Yellow	Fifth from the top	When illuminated a Dolby signal is detected at input 2.
Error 2	Red	Sixth from the top	When illuminated this indicates that signal is missing or corrupted.
COM Activity	Green	Seventh from the top	When illuminated this indicates that the D6207A is communicating to Dashboard through the CAN bus.

Table 1. Status LED Descriptions

DIP switch settings

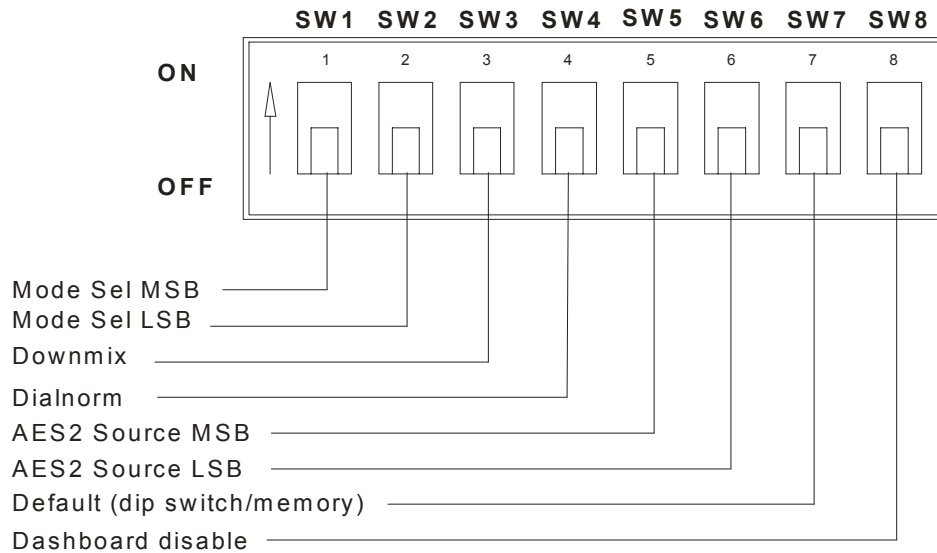


Figure 4. DIP Switch

Mode Select

SW1 MSB	SW2 LSB	
OFF	OFF	Single AES Input with SRC (AES Input 1=Dolby/AES Input 2=SRC Ref.)
OFF	ON	Single AES Input (AES Input 1 Only)
ON	OFF	Dual AES Input with Auto Swap
ON	ON	Dual AES Input (AES1=Dolby/ AES2=PCM)

Dialnorm

ON = Enabled
 OFF = Disabled (default setting)

Downmix

ON = Lt/Rt on AES Output 5
 OFF = Lo/Ro on AES Output 5 (default setting)

AES2 Source Select

SW5 MSB	SW6 LSB	
OFF	OFF	Rear Module Input #2
OFF	ON	Frame Ref Input #1
ON	OFF	Frame Ref Input #2
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. (default setting)

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. (default setting)

Modes Of Operation

Mode1: Single AES Input with Sample Rate Conversion

AES 1 input is a Dolby signal and AES 2 input is the reference signal. The D6207A decodes the Dolby signal and sample rate converts the output signals to the reference sample rate of the AES2 signal. If the AES2 signal is not present the sample rate of the outputs will be locked to that of the incoming signal on AES1 input.

Mode2: Single AES Input

AES 1 input is a Dolby signal. The D6207A decodes the signal and the outputs are locked to the sample rate of the input signal.

Mode 3: Dual AES Inputs with Auto Swap

AES inputs 1 and 2 both have signals connected to them. The D6207A looks at both signals to determine which one is a Dolby signal and routes the Dolby signal to the decoder. If both AES1 and AES2 are Dolby signals AES1 takes precedence and is routed to the decoder. If neither AES1 or AES2 are Dolby signals AES1 takes precedence and is routed to the appropriate output.

Mode4: Dual AES Inputs

AES1 is a Dolby signal and AES2 is a PCM signal. The D6207A routes the AES2, PCM signal to the SAP output connector on the rear module. The AES 1, Dolby signal is decoded and routed to the appropriate connectors on the rear module. If a SAP channel is detected in the AES1 signal it is replaced by the AES2 signal.

Please note that the output signal sample rates will be the same as that of the individual input signals. ie. If AES 1 and 2 had different sampling rates at the input of the D6207A then the sampling rate of the SAP signal will be the same as that of AES2 input and the sampling rate of the remaining outputs will be the same as that of the AES1 input.

If the AES inputs are flipped (AES1 is PCM, AES2 is Dolby) Dashboard will indicate an error. The D6207A will continue to operate.

Specifications

Digital Input	
Resolution	16, 20, 24 bit
Input Level	0.2-7 Vp-p
Input Impedance (transformer balanced)	75 Ohm
Sampling Frequency Range	32, 44.1, 48kHz Nominal Rates

Digital Output	
Resolution	24 bit
Output Level	1 Vp-p
Output Impedance	75 Ohm unbalanced
Sampling Frequency Range	32 to 48kHz
Jitter	Less than 5ns
Metadata	115kbps, 3Vp-p differential

General	
Power Requirements	+12V, 5 Watts Max
Dimensions	3.025" high x 12.800" deep
Weight	Approx. 0.160 kg (0.352 lbs)

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

Warranty and Service Information

Warranty and Repair Policy

The openGear D6207A 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 D6207A 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 D6207A 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 D6207A 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 D6207A 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 D6207A, 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 D6207A. 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.

Ordering Information

Standard Equipment

- **D6207A** DolbyE/AC3 Decoder

Optional Equipment

- **D6207AUM** DolbyE/AC3 Decoder Additional User Manual
- **T6305A Single Card Rear Module** (for installation into DFR-8320-C)
- **DFR-8320-C** Digital Products Frame and Power Supply with Cooling Fans (2RU, holds up to 10 cards)

Your **D6207A** DolbyE/AC3 Decoder 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.

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	416 • 335 • 5999, 800 • 771 • 2556
	Fax	416 • 335 • 5202
E-MAIL	General Information	request@ward-beck.com
	Technical Support	request@ward-beck.com
POSTAL SERVICE	Ward-Beck Systems Ltd.	455 Milner Avenue, Unit #10 Toronto, Ontario, Canada M1B 2K4

Visit Us

Please visit us at our website for:

- Company information
- Related products and full product lines
- On-line catalog
- Trade show information
- News

www.ward-beck.com