

6800+^{PLUS}[™]

APM6800+/APM6801+ Audio Processing Modules

Installation and Operation Manual

APM6800+/ APM6801+

Audio Processing Modules

Installation and Operation Manual

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Manual Information

Purpose

This manual details the features, installation, operation, maintenance, and specifications for the

- APM6800-D1+D/APM6801-D1+D Dolby® Decoder (E or AC-3) module
- APM6800-D2+D/APM6801-D2+D Dolby® E Encoder module
- APM6800-D3+D/APM6801-D3+D Dolby® Digital (AC-3) Encoder module
- APM6801+AAC+D AAC Encoder module
- APM6801UM+D DTS Neural Surround UpMix
- APM6801DM+D DTS Neural Surround DownMix
- APM6801MM+D DTS Neural Surround 5.1 and rendered stereo content transition
- APM6801LC+D Neural Loudness Control for 2.0 or 5.1
- APM6801LC+6+2+D Neural Loudness Control for 2.0 and 5.1
- APM6801LC+8+D Neural Loudness Control for four 2.0 program audio streams
- APM6801LC+DM+D DTS Neural Loudness Control for 5.1 Program Audio with DTS Neural Surround™ Downmix output
- APM6801UM+LC+D DTS Neural Surround™ UpMix DTV 5.1 Production Solution with DTS Neural Loudness Control
- APM6801DM+LC+D DTS Neural Surround™ DownMix DTV 5.1 Transport Solution with DTS Neural Loudness Control
- APM6801MM+LC+D DTS Neural Surround™ 5.1 and rendered stereo content transitioning for DTV 5.1 Production with DTS Neural Loudness Control

Audience

This manual is written for engineers, technicians, and operators responsible for installation, setup, maintenance, and/or operation of 6800+ modules.

Revision History


Table P-1. Revision History of Manual

Edition	Date	Comments
Edition A	June 2008	Initial release
Edition B	March 2009	Addition of APM6801+ AAC+ and Neural options
Edition C	June 2009	Addition of more Neural options

Writing Conventions

To enhance your understanding, the authors of this manual have adhered to the following text conventions:

Table P-2. Writing Conventions

Term or Convention	Description
Bold	Indicates dialog boxes, property sheets, fields, buttons, check boxes, list boxes, combo boxes, menus, submenus, windows, lists, and selection names
<i>Italics</i>	Indicates E-mail addresses, the names of books or publications, and the first instances of new terms and specialized words that need emphasis
CAPS	Indicates a specific key on the keyboard, such as ENTER, TAB, CTRL, ALT, or DELETE
Code	Indicates variables or command-line entries, such as a DOS entry or something you type into a field
>	Indicates the direction of navigation through a hierarchy of menus and windows
hyperlink	Indicates a jump to another location within the electronic document or elsewhere
Internet address	Indicates a jump to a website or URL
 Note	Indicates important information that helps to avoid and troubleshoot problems

Obtaining Documents

Product support documents can be viewed or downloaded from our website. Alternatively, contact your Customer Service representative to request a document.

Unpacking/Shipping Information

Unpacking a Product

This product was carefully inspected, tested, and calibrated before shipment to ensure years of stable and trouble-free service.

1. Check equipment for any visible damage that may have occurred during transit.
2. Confirm that you have received all items listed on the packing list.
3. Contact your dealer if any item on the packing list is missing.
4. Contact the carrier if any item is damaged.
5. Remove all packaging material from the product and its associated components before you install the unit.

Keep at least one set of original packaging, in the event that you need to return a product for servicing.

Product Servicing

Except for firmware upgrades, the modules are not designed for field servicing. All hardware upgrades, modifications, or repairs require you to return the modules to the Customer Service center.

Returning a Product

In the unlikely event that your product fails to operate properly, contact Customer Service to obtain a Return Authorization (RA) number, and then send the unit back for servicing.

If the original package is not available, you can supply your own packaging as long as it meets the following criteria:

- The packaging must be able to withstand the product's weight.
- The product must be held rigid within the packaging.
- There must be at least 2 in. (5 cm) of space between the product and the container.
- The corners of the product must be protected.

Ship products back to us for servicing prepaid and, if possible, in the original packaging material. If the product is still within the warranty period, we will return the product prepaid after servicing.

Restriction on Hazardous Substances (RoHS) Directive

Directive 2002/95/EC—commonly known as the *European Union (EU) Restriction on Hazardous Substances (RoHS)*—sets limits on the use of certain substances found in electrical and electronic equipment. The intent of this legislation is to reduce the amount of hazardous chemicals that may leach out of landfill sites or otherwise contaminate the environment during end-of-life recycling. The Directive, which took effect on July 1, 2006, refers to the following hazardous substances:

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent Chromium (Cr-VI)
- Polybrominated Biphenyls (PBB)
- Polybrominated Diphenyl Ethers (PBDE)

In accordance with this EU Directive, products sold in the European Union will be fully RoHS-compliant and “lead-free.” Spare parts supplied for the repair and upgrade of equipment sold before July 1, 2006 are exempt from the legislation. Equipment that complies with the EU directive will be marked with a RoHS-compliant symbol, as shown in [Figure P-1](#).



Figure P-1. RoHS Compliance Symbol

Waste from Electrical and Electronic Equipment (WEEE) Directive

The *European Union (EU) Directive 2002/96/EC on Waste from Electrical and Electronic Equipment (WEEE)* deals with the collection, treatment, recovery, and recycling of electrical and electronic waste products. The objective of the WEEE Directive is to assign the responsibility for the disposal of associated hazardous waste to either the producers or users of these products. As of August 13, 2005, producers or users are required to recycle electrical and electronic equipment at end of its useful life, and must not dispose of the equipment in landfills or by using other unapproved methods. (Some EU member states may have different deadlines.)

In accordance with this EU Directive, companies selling electric or electronic devices in the EU will affix labels indicating that such products must be properly recycled. Contact your local Sales representative for information on returning these products for recycling. Equipment that complies with the EU directive will be marked with a WEEE-compliant symbol, as shown in [Figure P-2](#).

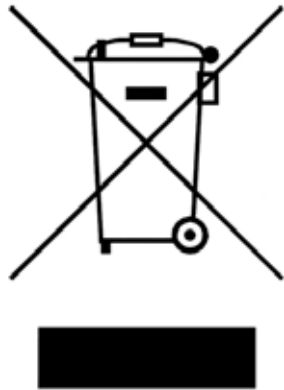


Figure P-2. WEEE Compliance Symbol

Safety

Carefully review all safety precautions to avoid injury and prevent damage to this product or any products connected to it. If this product is rack-mountable, it should be mounted in an appropriate rack using the rack-mounting positions and rear support guides provided. To protect a frame from circuit overloading, connect each frame to a separate electrical circuit. If this product relies on forced air cooling, all obstructions to the air flow should be removed prior to mounting the frame in the rack.

If this product has a provision for external earth grounding, ground the frame to the earth using the protective earth ground on the rear panel.

IMPORTANT! Only qualified personnel should perform service procedures.

Safety Terms and Symbols in this Manual



WARNING

Statements identifying conditions or practices that may result in personal injury or loss of life. High voltage is present.



CAUTION

Statements identifying conditions or practices that can result in damage to the equipment or other property.

Product Description

The APM6800-D1+D/APM6801-D1+D provides Dolby E or Dolby Digital (AC-3) decoding.

The APM6800-D2+D/APM6801-D2+D provides Dolby E encoding.

The APM6800-D3+D/APM6801-D3+D provides Dolby Digital (AC-3) encoding.

The APM6801+AAC+D provides AAC encoding.

The APM6801UM+D provides DTS Neural Surround UpMixing.

The APM6801DM+D provides DTS Neural Surround DownMixing.

The APM6801MM+D provides DTS Neural Surround 5.1 and rendered stereo content transitioning.

The APM6801LC+D provides Neural Loudness Control for 2.0 or 5.1.

The APM6801LC+6+2+D provides Neural Loudness Control for 2.0 and 5.1.

The APM6801LC+8+D provides Neural Loudness Control for four 2.0 program audio streams.

The APM6801LC+DM+D provides DTS Neural Loudness Control for 5.1 Program Audio with DTS Neural Surround™ Downmix output.

The APM6801UM+LC+D provides DTS Neural Surround™ UpMix DTV 5.1 Production Solution with DTS Neural Loudness Control.

The APM6801DM+LC+D provides DTS Neural Surround™ DownMix DTV 5.1 Transport Solution with DTS Neural Loudness Control.

The APM6801MM+LC+D provides DTS Neural Surround™ 5.1 and rendered stereo content transitioning for DTV 5.1 Production with DTS Neural Loudness Control.

Main Features

- Reference analog video input (selectable frame genlock or external input on breakout cable)
- Eight unbalanced AES input and output channels

- Unbalanced AES connections can be converted to balanced by using external baluns
- RS-232/RS-422 connector included that provides Audio Metadata input to the encoders and output from the decoders
- Input and output routing
- DARS reference input (back module BNC or breakout cable)
- Input SRC (Sample Rate Conversion)
- Audio Test tone generator

Applications

AAC and Dolby-encoded signals must be decoded for any audio processing tasks (such as voice-over or mixing) in any other audio elements.

Typically, Dolby E is used in contribution applications; AC-3 is used for distribution applications (transmitting into the home). AAC is used in contribution and distribution applications.



Note

Due to high levels of heat dissipation, the modules should not be installed in frames without fans. The modules cannot be installed in FR6802+DM and 6800/7000 series frames.

Module Description

Front Module

Figure 1-1 shows the position of the LEDs and module controls on the front of the modules.

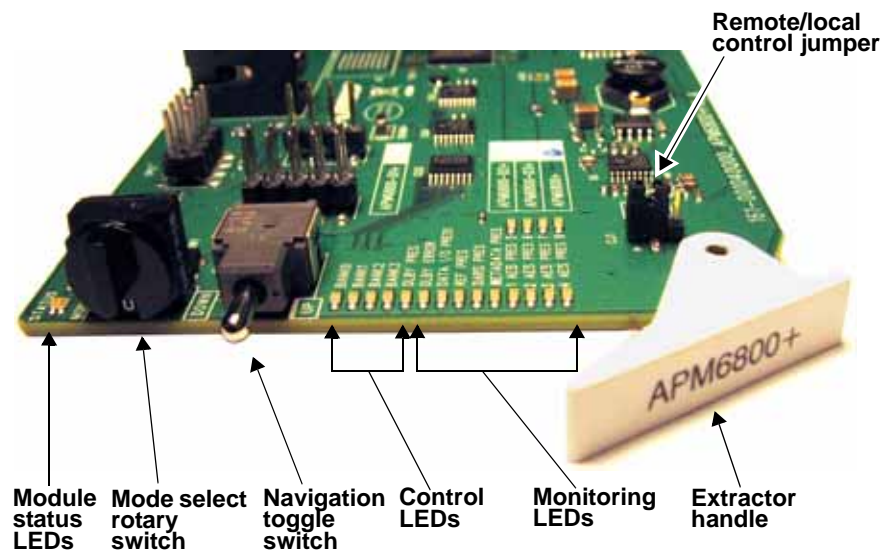


Figure 1-1. APM6800+/APM6801+ Front Module

Table 1-1 on page 3 briefly describes the LEDs, switches, and jumpers.

Table 1-1. Generic Module Features

Feature	Description
Module status LEDs	Various color and lighting combinations of these LEDs indicate the module state. See “LED Status Indicators” on page 65 for more information.
Mode select rotary switch	This switch selects between various control and feedback parameters.
Navigation toggle switch	This switch navigates up and down through the available control parameters: <ul style="list-style-type: none"> • Down: Moves down through the parameters • Up: Moves up through the parameters
Control LEDs	Various lighting combinations of these Control LEDs (sometimes referred to as “Bank Select LEDs”) indicate which bank is currently selected. See “Bank Select LEDs” on page 21 for more information.
Monitoring LEDs	Each 6800+ module has a number of LEDs assigned to indicate varying states/functions. See “Module Status LED Descriptions” on page 66 for a description of these LEDs.
Local/remote control jumper	<ul style="list-style-type: none"> • Local: Locks out external control panels and allows card-edge control only; limits the functionality of remote software applications to only monitoring the APM6800+/APM6801+. • Remote: Allows remote or local (card-edge) configuration, operation, and monitoring of the module. See page 15 for more information on jumpers.

Back Modules

Figure 1-2 shows the double-slot back module used by the APM6800+/APM6801+ modules. The back modules and the front modules cannot be installed in frames without fans, or in FR6802+DM and 6800/7000 series frames.



Figure 1-2. Back Connectors

Breakout Cables

The standard module ships with an unbalanced audio breakout cable (illustrated in [Figure 1-3](#)).

Pinouts are listed in [Table 1-2](#), and pin numbers for the 44-pin connector are illustrated in [Figure 1-4](#).

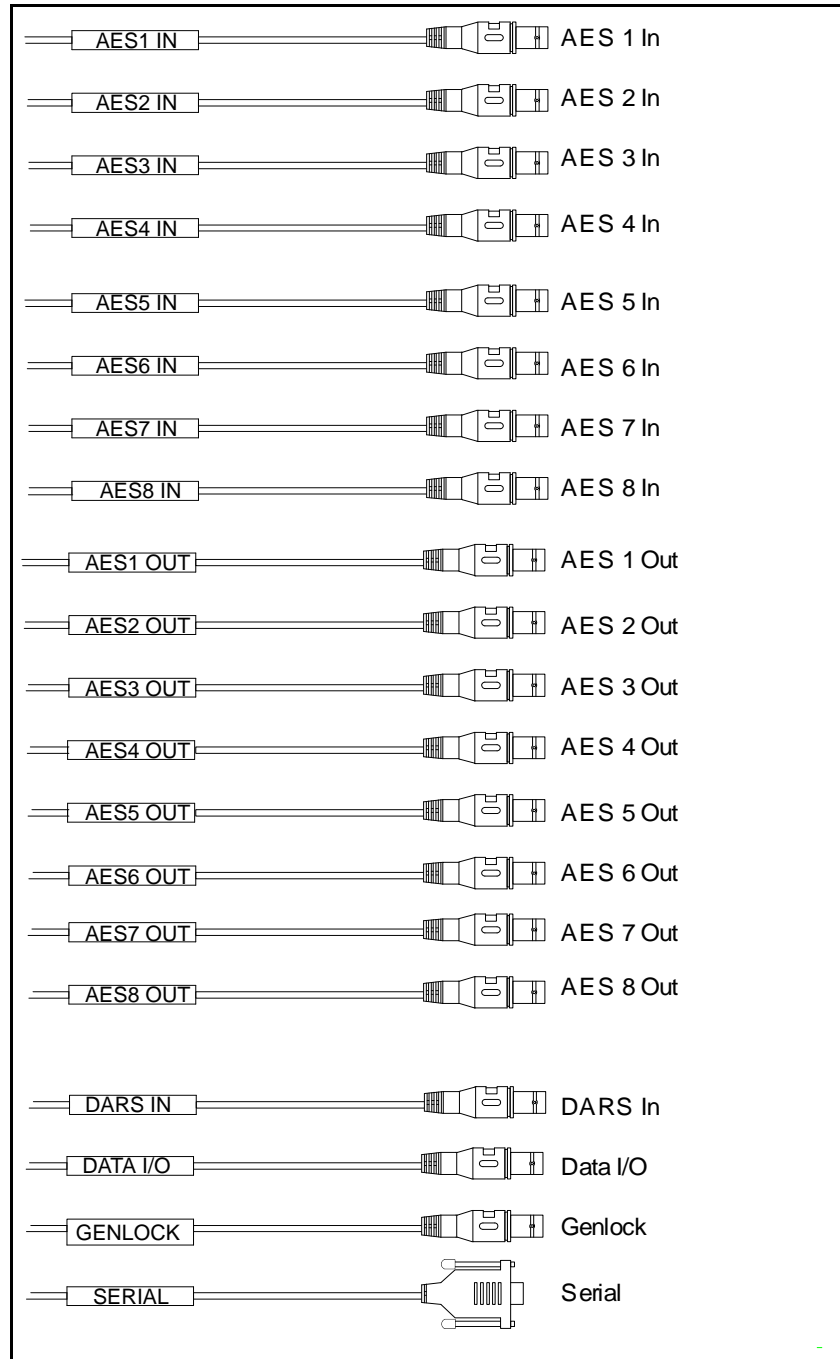


Figure 1-3. Unbalanced Audio Breakout Cable

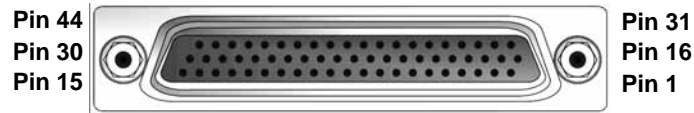


Figure 1-4. Pin Numbers for 44-Pin Connector

Table 1-2. Pinouts for 44-Pin Connector

Pin No. on DB-44M	Connection Type	Description	Wire Label	External Cable Color	BNC Color
1	BNC	GENLOCK	GENLOCK	Black	Black
2	BNC GND	GENLOCK GND	GENLOCK	Black	Black
3	BNC GND	AES OUT 7 GND	AES OUT 7	Blue	Blue
4	BNC	AES IN 4	AES IN 4	White	White
5	BNC GND	AES IN 4 GND	AES IN 4	White	White
6	BNC	AES IN 3	AES IN 3	White	White
7	BNC GND	AES IN 3 GND	AES IN 3	White	White
8	BNC	DATA IO	DATA IO	Yellow	Yellow
9	BNC GND	DATA IO GND	DATA IO	Yellow	Yellow
10	BNC	AES OUT 2	AES OUT 2	Blue	Blue
11	BNC GND	AES OUT 2 GND	AES OUT 2	Blue	Blue
12	BNC	AES OUT 1	AES OUT 1	Blue	Blue
13	BNC GND	AES OUT 1 GND	AES OUT 1	Blue	Blue
14	BNC GND	AES IN 7 GND	AES IN 7	White	White
15	BNC	AES IN 7	AES IN 7	White	White
16	Not Connected				
17					
18	BNC	AES OUT 7	AES OUT 7	Blue	Blue
19	BNC	DARS IN 1	DARS IN 1	Yellow	Black
20	BNC GND	DARS IN 1 GND	DARS IN 1	Yellow	Black
21	BNC	AES IN 2	AES IN 2	White	White
22	BNC GND	AES OUT 3 GND	AES OUT 3	Blue	Blue
23	BNC	AES OUT 3	AES OUT 3	Blue	Blue
24	BNC GND	AES OUT 6 GND	AES OUT 6	Blue	Blue
25	162A10019X (DB9.5)	RS232_GND (DB9)	SERIAL	Black	N/A
25	BNC GND	AES OUT 4 GND	AES OUT 4	Blue	Blue

Table 1-2. Pinouts for 44-Pin Connector (*Continued*)

Pin No. on DB-44M	Connection Type	Description	Wire Label	External Cable Color	BNC Color
26	BNC	AES OUT 4	AES OUT 4	Blue	Blue
27	BNC GND	AES OUT 5 GND	AES OUT 5	Blue	Blue
28	BNC	AES IN 8	AES IN 8	White	White
29	BNC GND	AES IN 8 GND	AES IN 8	White	White
30	BNC GND	AES IN 5 GND	AES IN 5	White	White
31	162A10019X (DB9.3)	BALANCED SERIAL IN- (DB9)	SERIAL	Red	N/A
32	162A10019X (DB9.8)	BALANCED SERIAL IN+ (DB9)	SERIAL	Yellow	N/A
33	BNC GND	AES OUT 8 GND	AES OUT 8	Blue	Blue
34	BNC	AES OUT 8	AES OUT 8	Blue	Blue
35	162A10019X (DB9.1)	RS422_FR_GND (DB9)	SERIAL	Black	N/A
35	BNC GND	AES IN 2 GND	AES IN 2	White	White
36	BNC	AES IN 1	AES IN 1	White	White
37	162A10019X (DB9.9)	RS422_FR_GND (DB9)	SERIAL	Black	N/A
37	BNC GND	AES IN 1 GND	AES IN 1	White	White
38	BNC	AES OUT 6	AES OUT 6	Blue	Blue
39	162A10019X (DB9.7)	BALANCED SERIAL OUT- (DB9)	SERIAL	Blue	N/A
40	162A10019X (DB9.2)	BALANCED SERIAL OUT+ (DB9)	SERIAL	Green	N/A
41	BNC	AES OUT 5	AES OUT 5	Blue	Blue
42	BNC GND	AES IN 6 GND	AES IN 6	White	White
43	BNC	AES IN 6	AES IN 6	White	White
44	BNC	AES IN 5	AES IN 5	White	White

RS-232/RS-422 Connector

The RS-232/RS-422 connector on the breakout cable is used for serial metadata transmission.

The DB-9 female connector is illustrated in [Figure 1-5](#) and the pinouts are listed in [Table 1-3](#).

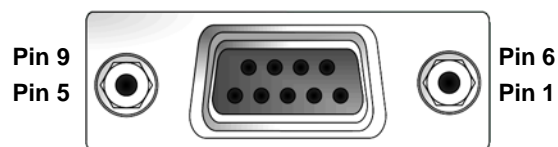
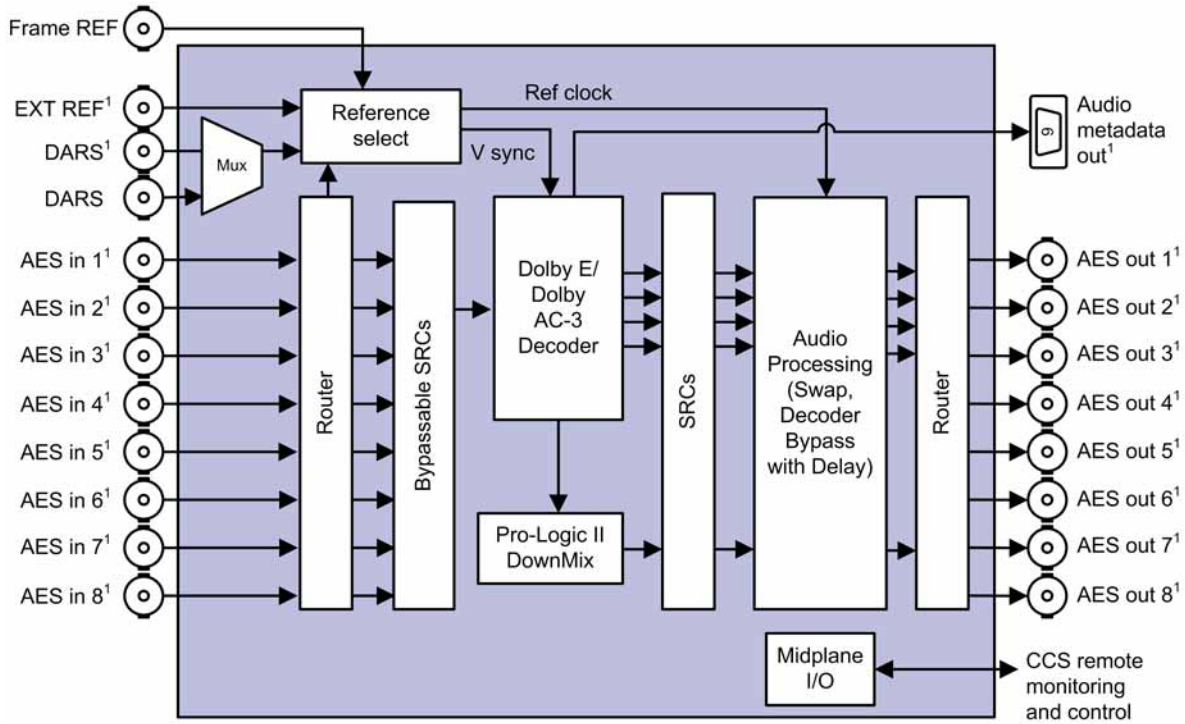


Figure 1-5. Pin Numbers for RS-232/RS-422 DB-9 Female Connector

Table 1-3. Pinouts for RS-232/RS-422 DB-9 Female Connector

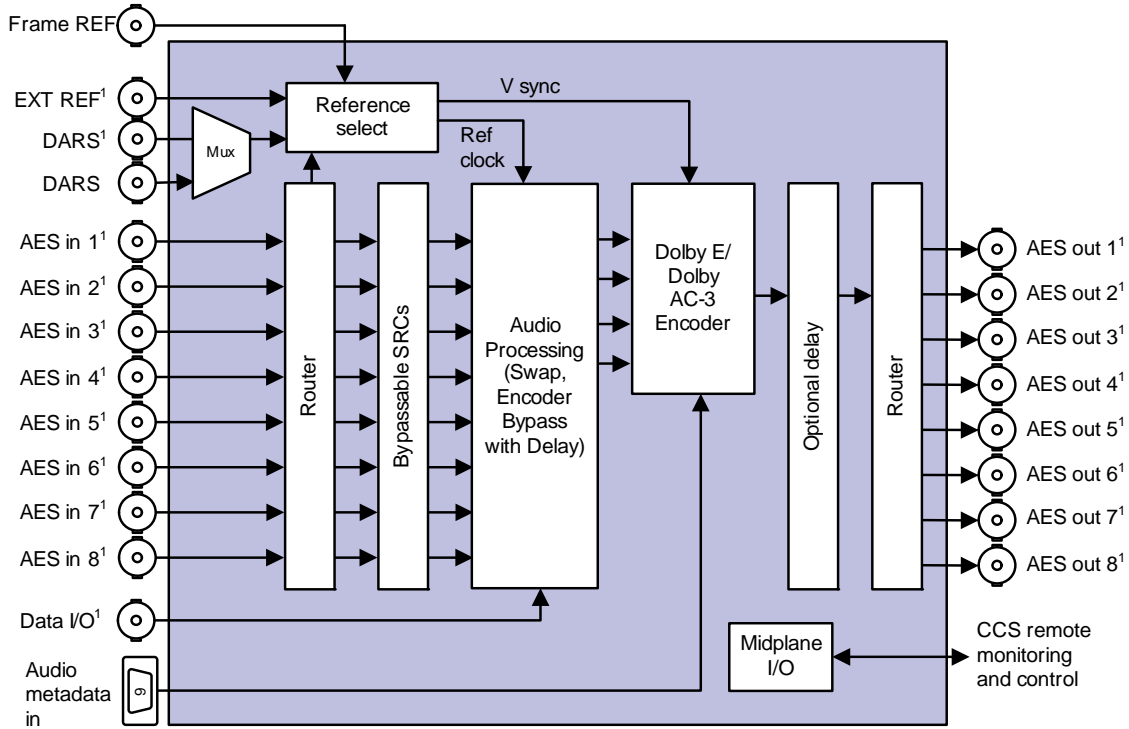
Pin No. on DB-9M	Signal	Description
1	FG	Frame Ground
9	FG	Frame Ground
5	FG	Frame Ground
2	TA (Tx-)	Transmitted Data -
7	TB (Tx+)	Transmitted Data +
8	RA (Rx-)	Received Data -
3	RB (Rx+)	Received Data +
4	Not Connected	
6		

Signal Flow



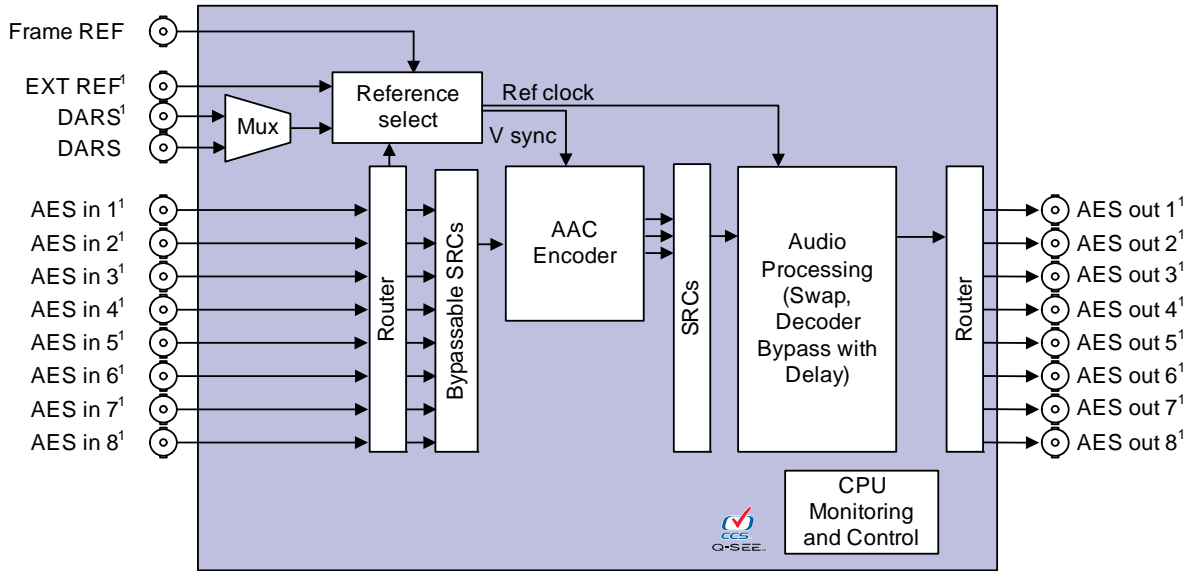
¹Available via breakout cable (included).

Figure 1-6. APM6800-D1+D/APM6801-D1+D Signal Flow Diagram



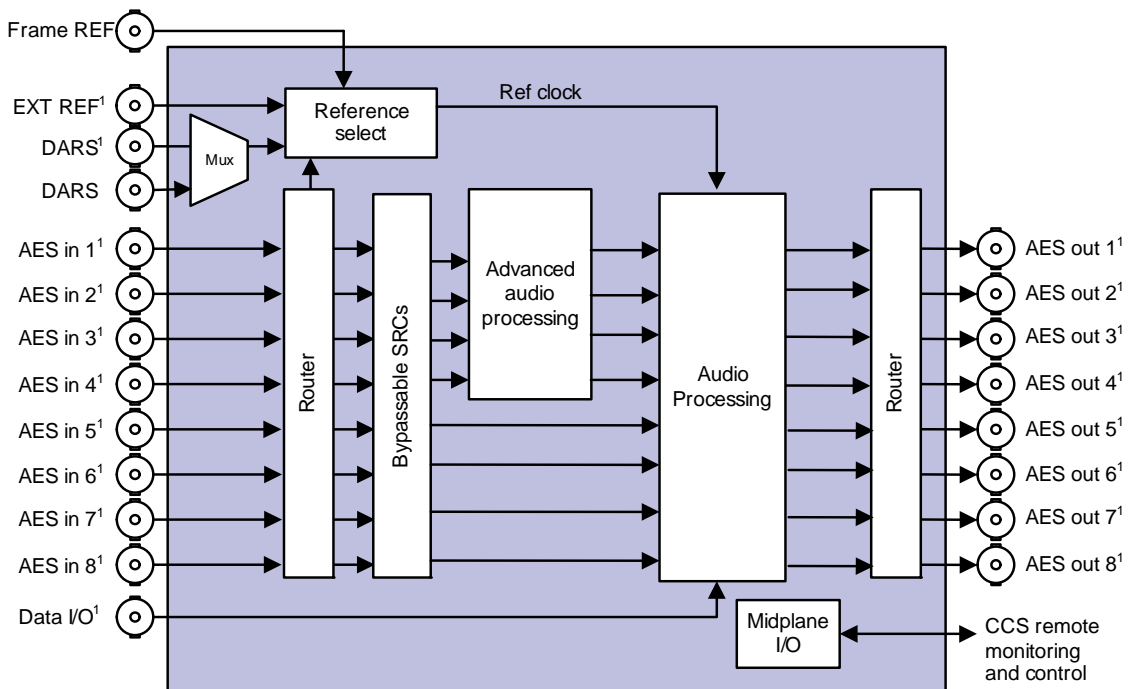
¹Available via breakout cable (included).

Figure 1-7. APM6800-D2+D/APM6801-D2+D and APM6800-D3+D/APM6801-D3+D Signal Flow Diagram



¹Available via breakout cable (included).

Figure 1-8. APM6801+ AAC+ Signal Flow Diagram



¹Available via breakout cable (included).

Figure 1-9. APM6801+ Neural Modules (UM, DM, MM, LC, LC+6+2+, LC+8+, LC+DM+, UM+LC+, DM+LC+, MM+LC+) Signal Flow Diagram

Preparing the Product for Installation

Before you install the APM6800+/APM6801+, perform the following:

- Check the equipment for any visible damage that may have occurred during transit.
- Confirm receipt of all items on the packing list. See [“Checking the Packing List” on page 14](#) for more information.

Contact your Customer Service representative if parts are missing or damaged.

- Remove the anti-static shipping pouch, if present, and all other packaging material.
- Retain the original packaging materials for possible re-use.

See [“Unpacking/Shipping Information” on page ix](#) for information about returning a product for servicing.

Checking the Packing List

Table 2-1. Available Product Packages

Ordered Product	Content Description
APM6800-D1+D/APM6801-D1+D	<ul style="list-style-type: none"> • One front module • One back module • One breakout cable • One <i>APM6800+/APM6801+ Installation and Operation Manual</i>
APM6800-D2+D/APM6801-D2+D	
APM6800-D3+D/APM6801-D3+D	
APM6801+AAC+D	
APM6801UM+D	
APM6801DM+D	
APM6801MM+D	
APM6801LC+D	
APM6801LC+6+2+D	
APM6801LC+8+D	
APM6801LC+DM+D	
APM6801UM+LC+D	
APM6801DM+LC+D	
APM6801MM+LC+D	

Selecting an External Balun

The following baluns from Neutrik or equivalent are recommended for the unbalanced to balanced AES conversion:

NADITBNC-F : Female chassis XLR 110Ω input - female BNC 75Ω output.

http://www.neutrik.com/fl/en/audio/210_309314683/NADITBNC-F_detail.aspx

NADITBNC-M: Female BNC 75Ω input - male chassis XLR 110Ω output.

http://www.neutrik.com/fl/en/audio/210_2044239418/NADITBNC-M_detail.aspx

NADITBNC-FX: Female cable end XLR 110Ω input - female BNC 75Ω output.

http://www.neutrik.com/fl/en/audio/210_1576769505/NADITBNC-FX_detail.aspx

NADITBNC-MX: Female BNC 75Ω input - male cable end XLR 110Ω output.

http://www.neutrik.com/fl/en/audio/210_1923043515/NADITBNC-MX_detail.aspx

Setting Jumpers

The APM6800+/APM6801+ modules have two jumpers:

- One standard jumper (REM/LOC) for remote or local control ([page 15](#))
- One jumper (J5) for data I/O termination ([page 16](#))

[Figure 2-1](#) shows the location of the jumpers.



Figure 2-1. Jumper Locations



Note

You must configure modules for local or remote operation *prior* to power-up. To change the configuration, first remove the module from the frame, reset the jumper, and then reinstall the module.

The white triangle near the jumper pins on the module indicates pin 1.

Local and Remote Jumper Settings

To set the **REM/LOC** jumper for either remote or local control:

1. Locate the **REM/LOC** control jumper on the module. [Figure 2-1](#) shows the location of the **REM/LOC** jumper.
2. Do either of the following:
 - Place a jumper on pins 1 and 2 to set the module for Remote control.
 - Place a jumper on pins 2 and 3 to set the module for Local control.

See [Figure 2-2](#).

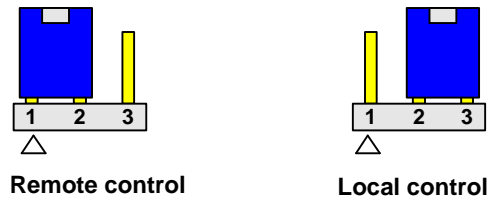


Figure 2-2. REM/LOC Settings for Remote and Local Control

See [Table 1-1 on page 3](#) for more information on local/remote control jumper functionality.

Data I/O Termination Jumper Settings

Follow this procedure to set the Data I/O Termination jumper J5:

1. Locate jumper **J5** on the module, near the back of the module. ([Figure 2-1 on page 15](#) shows the location of the jumper.)
2. Do either of the following:
 - Place a jumper on pins 1 and 2 to set the module for 75Ω Onboard Termination.
 - Place a jumper on pins 2 and 3 to set the module for No Termination.

See [Figure 2-3](#).

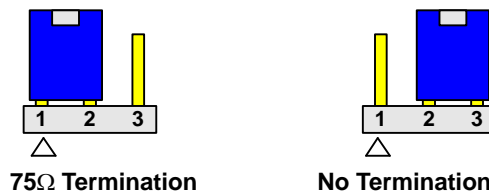


Figure 2-3. Data I/O Termination Settings

Maximum 6800+ Frame Power Ratings

The power consumption for the APM6800+/APM6801+ modules is less than 12 W. [Table 2-2](#) shows the maximum allowable power ratings for 6800+ frames. Note the given maximums before installing any 6800+ modules in your frame.

Due to high levels of heat dissipation, the modules should not be installed in frames without fans. The modules cannot be installed in FR6802+DM and 6800/7000 series frames.



Note

To maintain proper temperatures, ensure that the front panel is closed at all times, and that the fan module is fully operational.

Table 2-2. Maximum Power Ratings for 6800+ Frames

6800+ Frame Type	Max. Frame Power Dissipation	Max. Number of APM6800+/APM6801+ Modules	Max Power Dissipation for Two Slots*
FR6802+QXF (frame with AC or DC power supply)	120 W	10	12 W
FR6802+XF (frame with AC power supply)	120 W	10	12 W
FR6802+XF48 (frame with DC power supply)	105 W	10	10.5 W
FR6822+ (frame with AC or DC power supply)	120 W	10	12 W

* Each front module requires two slots.



Caution

Before installing this product, read the *6800+ Series Safety Instructions and Standards Manual* shipped with every frame installation and operation manual. This information is also available on our website. The safety manual contains important information about the safe installation and operation of 6800+ series products.

See your frame installation and operation manual for information about installing and operating an FR6802+ or FR6822+ frame and its components.

Installing the Module

The APM6800+/APM6801+ modules have a double-width back module. Due to high levels of heat dissipation, the modules should not be installed in frames without fans. The modules cannot be installed in FR6802+DM and 6800/7000 series frames.

These modules require no specialized installation or removal procedures. However, if you are installing both front and rear modules, ensure that the back module is installed first before plugging in the front module. Likewise, ensure that the front module is unplugged from the frame before removing the rear module. See your *Frame Installation and Operation Manual* for information about installing and operating an FR6802+ or FR6822+ frame and its components.

An FR6802+RM (Rear Support Extension Rails for 6800+ series frames) option is recommended for APM6800+/APM6801+ modules. See your *Frame Installation and Operation Manual* for installation instructions.

Upgrading Module Firmware

This module's firmware can be updated using CCS Pilot, CoPilot, or Navigator version 3.1.1 or higher, or the HTTP software upgrade tool. In order to perform these upgrades, your frame must be equipped with a 6800+ETH module. See your frame manual for more information.

Firmware upgrades for the APM6800+/APM6801+ can also provide firmware upgrades for the Neural audio processing submodule. In the event firmware for the submodule is upgraded, the module will take approximately 2.5 minutes to fully start up while new firmware is loaded. During this time the card-edge LEDs will flash back and forth. Once this time has elapsed the module will become controllable. Subsequent module start-ups will resume to the normal 8 seconds.

Configuration and Operation

Overview

This chapter describes how to operate the APM6800+/APM6801+ modules using card-edge controls or by using CCS Navigator.

The following topics are discussed in this chapter:

- [“Operating Notes” on page 19](#)
- [“Changing Parameter Settings” on page 20](#)

For detailed information on how to operate this product remotely, see the CCS Pilot, CoPilot, Navigator, or NUCLEUS Network Control Panel, LCP-3901-1U/RCP-CCS-1U manuals for Ethernet interface.

APM6800+/APM6801+ modules do not support + Pilot Lite software; however, you can use HTTP monitoring and control (6800+ETH+HTTP). To use 6800+ETH+HTTP (especially if you are upgrading to 6800+ETH+HTTP in the field), you must have the following:

- 6800+ETH firmware version 3.0 or higher
- A PC connected to a LAN with a JavaScript-enabled web browser such as Microsoft Internet Explorer 6.0
- A FR6802+QXF or FR6822+QXFE frame installed and connected to the LAN
- A standard 100 Mbps 100Base-T RJ-45 Ethernet cable segment (use a “crossover” RJ-45 cable to connect to a PC, or a normal “straight-through” RJ-45 cable to connect to an Ethernet hub/switch)

For more information, see your *Frame Installation and Operation Manual*.

Operating Notes

When setting the control parameters on the APM6800+/APM6801+, observe the following:

- If you make changes to certain parameters, other related parameters may also be affected.

- When you change a parameter, the effect is immediate. However, the module requires up to 20 seconds to save the latest change. After 20 seconds, the new settings are saved and will be restored if the module loses power and must be restarted.
- Terminate any unused coaxial output connectors with a 75Ω connector.
- If the required video reference is not present when you are operating APM6800-D2+D/APM6801-D2+D, the free-running reference that is specified in the Frame Rate parameter is generated to permit the encoding. (For more information about Encoder parameters, see [Table 4-4 on page 38](#).)
- When **Input 2 (Module)** is selected for the **DARS Input Select** parameter, the DARS input on the breakout cable (Input 1) becomes a DARS output. This output is intended to be used in conjunction with the SFS6800+ and the 6800+OPT+BRGAPM cable combination, as a way to transfer the DARS signal to the SFS6800+. (For more information, see [“Appendix C: Audio Only & Audio/Video Module Combinations” on page 93](#).)

Changing Parameter Settings

There are two ways to change the parameters that control your module’s operation: CCS software applications and card-edge controls.

Using CCS Navigator, you can view, set, and confirm your module’s parameter settings from your computer’s monitor. Using the card-edge controls, you can set parameters using the module’s rotary hex and navigation switches.

You can use the information in this chapter to configure and operate your module using a CCS software application or the module’s card-edge controls. For more information about setting parameters using the software application or by using the module’s card-edge control, see [“Changing Parameters Using CCS Navigator” on page 20](#) and [“Changing Parameter Settings Using Card-Edge Controls” on page 21](#).

A complete list of APM6800+/APM6801+ control parameters can be found in [“Chapter 4: Parameters, LEDs, and Alarms” on page 27](#).

Changing Parameters Using CCS Navigator

Before using CCS software applications to change your module’s parameter settings, you must discover CCS Navigator the module. Discovery is the processes by which your software finds, and then connects to your module.

Discovering a Module Using Navigator

To discover your module, your Navigator software must be in Build mode.

1. If the Discovery pane is not open, select **Tools > Discovery** in the main menu.

A **Discovery** pane opens, most likely in the bottom left corner of the screen.

2. Click **Options**, and then click **Add**.

3. Enter the IP address of the frame that contains your module, the frame that contains your ICE6800+ module, or the frame that contains a 6800+ETH module that provides access to your module.
4. Click **OK**, and then **OK** again to close the **Discovery Options** dialog box.
5. Click **Start**.
Navigator runs a discovery.
6. When your discovery is complete, **Discovery Completed** is displayed in the **Discovery** pane. To continue, click **Save** to save the contents of your discovery to the **Discovery** folder of the **Navigation** pane.

You can now switch to Control mode by selecting **Operational Mode > Control** from the main menu. Double-click the module's name in the Navigation pane. The **Control** dialog box opens displaying the module's controls.

Changing Parameter Settings Using Card-Edge Controls

Use the module's rotary and navigation switches to change your APM6800+/APM6801+ parameter settings at the card edge.

1. Rotate the hex switch (mode select rotary switch) to "0."
2. Once the hex switch is set to "0," toggle the navigation switch up or down to select a bank.

View the four control LEDs next to the navigation toggle switch to see which bank is currently selected. (See [Table 3-1](#).)

See "[Parameters, LEDs, and Alarms](#)" on page 27 to view the various banks, hex switch positions, and corresponding parameter options and values.

Table 3-1. Bank Select LEDs

Bank 3	Bank 2	Bank 1	Bank 0	Bank Number
Off	Off	Off	Off	0
Off	Off	Off	On	1
Off	Off	On	Off	2
Off	Off	On	On	3
Off	On	Off	Off	4
Off	On	Off	On	5
Off	On	On	Off	6
Off	On	On	On	7
On	Off	Off	Off	8
On	Off	Off	On	9
On	Off	On	Off	A (10)
On	Off	On	On	B (11)
On	On	Off	Off	C (12)

Table 3-1. Bank Select LEDs (Continued)

Bank 3	Bank 2	Bank 1	Bank 0	Bank Number
On	On	Off	On	D (13)
On	On	On	Off	E (14)
On	On	On	On	F (15)

3. Rotate the hex switch to the parameter number (1 to 9) or letter (A to F) of the option you want to set.
4. Toggle the navigation switch to select and set the value of the chosen parameter.
5. Do either of the following:
 - Rotate the hex switch to another parameter number/letter in the current bank, and then repeat step 4.
 - Rotate the hex switch to “0” again to select a different bank, and then repeat steps 3 and 4.



Note

For best results, use the available 6800+ software control options (serial/local or Ethernet/remote) to help view, set, and confirm parameter values.

Recalling Default Parameter Settings

You can use the module’s **Factory Recall** parameter to return all of the module’s parameters to factory default settings. In the control parameter list (see “Parameters, LEDs, and Alarms” on page 27), each factory default setting appears in bold.

To return this module to its default settings, make the following selections:

Setting Description	Parameter Navigation		
Recall factory default settings	General	Factory Recall [0 , F]	Yes

Viewing Software and Hardware Versions

You can see the current software and hardware versions of the APM6800+/APM6801+ module. In Navigator, right-click the name of the module in the Navigator Window, and then select **Configuration**. A dialog box appears with the version information.

In addition, you can view the software and hardware versions in CSS-enabled control panels.

Selecting the Module Locking Source

By using the Lock Source Select parameter, the module can be locked to any of the following lock sources:

- Genlock
- DARS
- Dolby Decoder Source (for APM6800-D1+D/APM6801-D1+D, this is Input AES 1–8)
- Dolby Encoder Ch 1 Source (for APM6800-D2+D/APM6801-D2+D and APM6800-D3+D/APM6801-D3+D, this is Input AES 1–8)

The Lock Source status parameter reports the locking source of the module.

When the module locks to either Genlock or DARS, it attempts to use DARS for AES 11 compliance first. If DARS is not present, the module then attempts to use the reference video for AES 11 compliance if the reference video frame rate is either 25 Hz or 50 Hz.

When the module locks to AES 1–8, the module uses the same AES input signal for AES 11 compliance at the output. In this case, the DARS signal is not used, even if it is present. If DARS or reference video needs to be used for AES 11 compliance, use either Genlock or DARS as the locking source for the module.

Audio Test Tones

Table 3-2 describes the frequency and levels of each audio output test tone option that are available in the following parameters:

- Output AES 1A–8B
- Dolby Encoder In 1–8 (APM6800-D2+D/APM6801-D2+D and APM6800-D3+D/APM6801-D3+D only)
- Neural Audio In 1-8 (APM6801UM+D, APM6801DM+D, APM6801MM+D, APM6801LC+D, APM6801LC+6+2+D, APM6801LC+8+D, APM6801LC+DM+D, APM6801UM+LC+D, APM6801DM+LC+D, and APM6801MM+LC+D only)

Table 3-2. Audio Output Test Tones

Test Tone	Frequency	Default Level
Test Tone 400 Hz	400 Hz	-18 dBFS
Test Tone 1 kHz	1 kHz	-18 dBFS
Test Tone 2 kHz	2 kHz	-18 dBFS
Test Tone 4 kHz	4 kHz	-18 dBFS
EBU R68	1 kHz	-18.06 dBFS
SMPTE RP155	1 kHz	-20 dBFS

Audio Status Reporting

Table 3-3 describes the thresholds for audio status peak and silence reporting.

Table 3-3. Audio Status Peak and Silence Reporting Thresholds

Status	Threshold
Peak	0 dBFS
Silence	-100 dBFS

Clearing External Metadata

When you apply external metadata to the APM6800-D2+D/APM6801-D2+D or the APM6800-D3+D/APM6801-D3+D, the metadata properties persist even after you remove the external metadata from the module. Performing a Factory Recall of the user settings does not clear the metadata properties that were received when external metadata was present. After you remove the external metadata, you must restart the module to clear the metadata properties.

Audio Synchronization

The APM6800+/APM6801+ modules provide the capability to synchronize audio with a companion video frame synchronizer by using the Data I/O connection. To enable the audio synchronizer, set the **Audio Track Video** parameter to **Yes**. The Data I/O status of the upstream video frame synchronizer will be reported in the **Input > Data I/O** menu.



Note

Do not use the audio synchronization feature with the APM6800-D1+D/APM6801-D1+D module. It can corrupt the incoming Dolby E or AC3 signal.

Audio Delay

Use of the audio synchronization feature will effect the maximum available audio delay to any of the incoming AES signals. When the audio synchronizer (**Audio Track Video** parameter) is set to **No**, the total available audio delay to any of these signals is 2.5 seconds. When the audio synchronizer is set to **Yes**, the total available audio delay is the result of 2.64 seconds minus the **Data I/O Video Delay** reported in the Input > Data I/O menu, up to a maximum of 2.5 seconds.

For example: if **Audio Track Video** is set to **Yes** and the **Data I/O Video Delay** reports 1500 ms, the maximum available audio delay will be 1140 ms.

Audio Modes (APM6801+AAC Only)

Table 3-4. HE-AAC, AAC-LC Audio Standards and Modes

Possible Audio Standards	Possible Audio Modes *					Nominal Bit Rate (bps)	Transport Stream Bit Rate (bps) (Includes TS Overhead)
	Mono	Dual-Mono	Stereo	Parametric Stereo	5.1		
aac-he-24k	Yes	No	No	Yes	No	24000	29375
aac-he-32k	Yes	No	No	Yes	No	32000	35250
aac-he-40k	Yes	No	No	Yes	No	40000	41125
aac-he-48k	Yes	No	Yes	Yes	No	48000	52875
aac-he-56k	Yes	No	Yes	Yes	No	56000	60160
aac-lc-56k	Yes	Yes	Yes	No	No	56000	60160
aac-he-64k	Yes	No	Yes	Yes	No	64000	66176
aac-lc-64k	Yes	Yes	Yes	No	No	64000	66176
aac-he-80k	No	No	Yes	No	No	80000	84224
aac-lc-80k	Yes	Yes	Yes	No	No	80000	84224
aac-he-96k	No	No	Yes	No	No	96000	102272
aac-lc-96k	Yes	Yes	Yes	No	No	96000	102272
aac-he-112k	No	No	Yes	No	No	112000	120320
aac-lc-112k	Yes	Yes	Yes	No	No	112000	120320
aac-he-128k	No	No	Yes	No	No	128000	132352
aac-lc-128k	Yes	Yes	Yes	No	No	128000	132352

Table 3-4. HE-AAC, AAC-LC Audio Standards and Modes (Continued)

Possible Audio Standards	Possible Audio Modes *					Nominal Bit Rate (bps)	Transport Stream Bit Rate (bps) (Includes TS Overhead)
	Mono	Dual-Mono	Stereo	Parametric Stereo	5.1		
aac-he-160k	No	No	No	No	Yes	160000	164500
aac-lc-160k	Yes	Yes	Yes	No	No	160000	168448
aac-he-192k	No	No	No	No	Yes	192000	199750
aac-lc-192k	No	Yes	Yes	No	No	192000	198528
aac-he-224k	No	No	No	No	Yes	224000	23500
aac-lc-224k	No	Yes	Yes	No	No	224000	234624
aac-he-240k	No	No	No	No	Yes	240000	246750
aac-lc-256k	No	Yes	Yes	No	No	256000	264704
aac-lc-280k	No	No	No	No	Yes	280000	287875
aac-lc-320k	No	Yes	Yes	No	No	320000	330880
aac-lc-384k	No	No	No	No	Yes	384000	393625
aac-lc-448k	No	No	No	No	Yes	448000	458250
aac-lc-512k	No	No	No	No	Yes	512000	528750
aac-lc-576k	No	No	No	No	Yes	576000	593375
aac-lc-640k	No	No	No	No	Yes	640000	658000
aac-lc-800k	No	No	No	No	Yes	800000	822500

Parameters, LEDs, and Alarms

APM6800+/APM6801+ Control Parameters

Table 4-2 to Table 4-11 list all of the available parameters and options for the modules. The parameters are listed in the order that they appear in Navigator. lists all the modules, and the parameter lists that apply to that module.

Table 4-1. Parameter Lists Per Module

Module	Applicable Parameter Lists
APM6800-D1+D/APM6801-D1+D	<ul style="list-style-type: none"> Table 4-2: APM6800+/APM6801+ Parameters on 29 Table 4-3: APM6800-D1+D/APM6801-D1+D-Specific Parameters on 34
APM6800-D2+D/APM6801-D2+D	<ul style="list-style-type: none"> Table 4-2: APM6800+/APM6801+ Parameters on 29 Table 4-4: APM6800-D2+D/APM6801-D2+D Parameters on 38
APM6800-D3+D/APM6801-D3+D	<ul style="list-style-type: none"> Table 4-2: APM6800+/APM6801+ Parameters on 29 Table 4-5: APM6800-D3+D/APM6801-D3+D Parameters on 45
APM6801+AAC	Table 4-6: APM6801+AAC+D Parameters on 50
APM6801UM+D	<ul style="list-style-type: none"> Table 4-2: APM6800+/APM6801+ Parameters on 29 Table 4-7: APM6801+ Neural Audio Common Parameters on 56 Table 4-8: Neural Audio UpMix Parameters on 59
APM6801DM+D	<ul style="list-style-type: none"> Table 4-2: APM6800+/APM6801+ Parameters on 29 Table 4-7: APM6801+ Neural Audio Common Parameters on 56 Table 4-9: Neural Audio DownMix Parameters on 60
APM6801MM+D	<ul style="list-style-type: none"> Table 4-2: APM6800+/APM6801+ Parameters on 29 Table 4-7: APM6801+ Neural Audio Common Parameters on 56 Table 4-10: Neural Audio MultiMerge Parameters on 61
APM6801LC+D	<ul style="list-style-type: none"> Table 4-2: APM6800+/APM6801+ Parameters on 29 Table 4-7: APM6801+ Neural Audio Common Parameters on 56 Table 4-11: Neural Audio Loudness Control Parameters on 62
APM6801LC+6+2+D	<ul style="list-style-type: none"> Table 4-2: APM6800+/APM6801+ Parameters on 29 Table 4-7: APM6801+ Neural Audio Common Parameters on 56 Table 4-11: Neural Audio Loudness Control Parameters on 62

Table 4-1. Parameter Lists Per Module (*Continued*)

Module	Applicable Parameter Lists
APM6801LC+8+D	<ul style="list-style-type: none"> • Table 4-2: APM6800+/APM6801+ Parameters on 29 • Table 4-7: APM6801+ Neural Audio Common Parameters on 56 • Table 4-11: Neural Audio Loudness Control Parameters on 62
APM6801LC+DM+D	<ul style="list-style-type: none"> • Table 4-2: APM6800+/APM6801+ Parameters on 29 • Table 4-7: APM6801+ Neural Audio Common Parameters on 56 • Table 4-9: Neural Audio DownMix Parameters on 60 • Table 4-11: Neural Audio Loudness Control Parameters on 62
APM6801UM+LC+D	<ul style="list-style-type: none"> • Table 4-2: APM6800+/APM6801+ Parameters on 29 • Table 4-7: APM6801+ Neural Audio Common Parameters on 56 • Table 4-8: Neural Audio UpMix Parameters on 59 • Table 4-11: Neural Audio Loudness Control Parameters on 62
APM6801DM+LC+D	<ul style="list-style-type: none"> • Table 4-2: APM6800+/APM6801+ Parameters on 29 • Table 4-7: APM6801+ Neural Audio Common Parameters on 56 • Table 4-9: Neural Audio DownMix Parameters on 60 • Table 4-11: Neural Audio Loudness Control Parameters on 62
APM6801MM+LC+D	<ul style="list-style-type: none"> • Table 4-2: APM6800+/APM6801+ Parameters on 29 • Table 4-7: APM6801+ Neural Audio Common Parameters on 56 • Table 4-10: Neural Audio MultiMerge Parameters on 61 • Table 4-11: Neural Audio Loudness Control Parameters on 62

Parameter Table Notes

When viewing the control parameter tables, observe the following:

- Shaded table rows with [RO] after the parameter name indicate read-only (feedback) parameters.
- Bolded parameter options indicate the default settings for the parameter.
- The bank selection and rotary switch combinations for each parameter and parameter option are listed in the tables under the **Bank, Switch** heading. For information about navigating through the parameter list using the card-edge controls, see [“Changing Parameter Settings Using Card-Edge Controls”](#) on page 21.
- Where a range is specified in a parameter name or option name as (1A–8B), this will include options 1A, 1B, 2A, 2B, up to and including 8A and 8B.

APM6800+/APM6801+ Parameters

The parameters in [Table 4-2](#) pertain to all APM6800+/APM6801+ modules.

Table 4-2. APM6800+/APM6801+ Parameters

Parameter Name	Bank, Switch	Function	Options
General			
Serial Number [RO]		Displays the serial number of the module	<string>
Factory Recall	0, F	Recalls the factory default settings	<ul style="list-style-type: none"> • Off • On
Input > AES			
Input AES (1–8) Present [RO]		Displays the presence of AES input for the specified channel	<ul style="list-style-type: none"> • No • Yes
Input > AES > Format			
Input AES (1A–8B) Format	5, F • • 6, F	Selects the AES format (Auto/PCM/non-PCM) of the selected input audio channel.	<ul style="list-style-type: none"> • Auto • PCM • Non-PCM
Input AES (1A–8B) Format Feedback [RO]		Displays the detected format for the specified channel	<ul style="list-style-type: none"> • PCM • Non-PCM • Unknown
Input > AES > Status			
Input AES (1A–8B) Status [RO]		Displays the current status of the audio input channel	<ul style="list-style-type: none"> <li style="width: 50%;">• Normal <li style="width: 50%;">• Peak <li style="width: 50%;">• Silence <li style="width: 50%;">• Not Present

Table 4-2. APM6800+/APM6801+ Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Input > V-Bit			
V-bit Mute Enable	7, 1	Enables automatic muting of outputs when the V-bit is set Note Muting on a detected V-Bit applies to PCM audio channels only. Non-PCM audio channels will not be muted.	<ul style="list-style-type: none"> • No • Yes
Input AES (1A–8B) V-Bit Feedback		Reports the validity bit status of the input audio channel	<ul style="list-style-type: none"> • Off • On
Input > Genlock/DARS			
Lock Source Select	0, A	Sets the locking source for the module	<ul style="list-style-type: none"> • Genlock • DARS
Lock Source [RO]		Displays the locking source for the module	<ul style="list-style-type: none"> • Genlock • DARS • AES 1 • AES 2 • AES 3 • AES 4 • AES 5 • AES 6 • AES 7 • AES 8
Genlock Input Source Select	0, B	Sets the reference video input source	<ul style="list-style-type: none"> • Frame Reference • Card Reference
Genlock Video Present [RO]		Displays the presence of the reference video signal	<ul style="list-style-type: none"> • No • Yes
Genlock Video Locked [RO]		Displays the locked status of the reference video signal	<ul style="list-style-type: none"> • No • Yes
Genlock Video Standard Feedback [RO]		Displays the detected reference video standard	<ul style="list-style-type: none"> • Unknown • 1080P 50 • 1080P 59.94 • 1080P 60 • 1080P 25 • 720P 59.94 • 720P 60 • 1080P 23.98 • 1080P 24 • 1080P 29.97 • 1080P 30 • 1080I 25 • 1080I 29.97 • 1080I 30 • 1080I 30 • SD 525 • SD 625 • 720P 50 • 1080PsF 23.98 • 1080PsF 24 • 720P 29.97 • 720P 30 • 720P 25 • 720P 23.98 • 720P 24
DARS Input Select	0, C	Sets the source of the DARS input signal	<ul style="list-style-type: none"> • Input 1 (Cable) • Input 2 (Module)

Table 4-2. APM6800+/APM6801+ Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
DARS Input Present [RO]		Displays the presence of the DARS input signal	<ul style="list-style-type: none"> No Yes
DARS Locked to Reference [RO]		Displays the locked status of the DARS input signal	<ul style="list-style-type: none"> No Yes
Input > Data I/O			
Data I/O Present		Reports the presence of the Data I/O signal	<ul style="list-style-type: none"> No Yes
Data I/O Video Standard		Reports the video standard indicated in the Data I/O signal	<ul style="list-style-type: none"> Unknown 1080I 30 1080P 50 SD 525 1080P 59.94 SD 625 1080P 60 720P 50 1080P 25 1080PsF 23.98 720P 59.94 1080PsF 24 720P 60 720P 29.97 1080P 23.98 720P 30 1080P 24 720P 25 1080P 29.97 720P 23.98 1080P 30 720P 24 1080I 25 1080I 29.97
Data I/O Video Hot Switch		Reports if a video hot-switch is indicated in the Data I/O signal	<ul style="list-style-type: none"> No Yes
Data I/O Video Delay		Reports the amount of video delay being tracked	0.000 ms to 2640.000 ms
Processing			
Fade Rate	3, B	Controls the rate of fading (in seconds) when channels are swapped or muted	0.0 to 10.0 (0.1)
Audio Control Style	7, 5	Switches between Mono and Stereo control styles	<ul style="list-style-type: none"> Mono Stereo
Processing > Sample Rate Conversion			
Input AES (1–8) SRC Control	0, 2 • • 0, 9	Controls the insertion of the audio sample rate converter in the processing path for the specified channel	<ul style="list-style-type: none"> Auto On Off
Input AES (1–8) SRC Status		Reports the state of the specified SRC	<ul style="list-style-type: none"> Enabled Bypassed

Table 4-2. APM6800+/APM6801+ Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Processing > AES Delay			
Delay Lock	7, 2	Couples fixed delay controls	<ul style="list-style-type: none"> • No • Yes
Input AES (1A–8B) Delay	0, D 0, E 1, 1 • • 1, E	Adjusts the delay (in ms) for input audio AES of the specified channel	0.00 ms to 2500.00 ms Note: See “Audio Delay” on page 25 for information on delay range limitations.
Processing > Gain			
Gain Lock	7, A	Couples gain controls	<ul style="list-style-type: none"> • No • Yes
Output AES (1A–8B) Gain	7, B • • 8, B	Adjusts gain for specified output audio AES channel	-36.0 dB to 36.0 dB (0.0 dB)
Processing > Invert			
Output AES (1A–8B) Invert	8, C • • 9, C	Inverts the selected audio channel to correct for phase error	<ul style="list-style-type: none"> • No • Yes
Processing > Mute			
Master Mute	9, D	Enables muting for all output audio channels	<ul style="list-style-type: none"> • Off • On
Output AES (1A–8B) Mute	9, E • • 10, E	Enables muting for specified output AES audio channel	<ul style="list-style-type: none"> • No • Yes

Table 4-2. APM6800+/APM6801+ Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Processing > Test Tones			
Test Tone 400 Hz Level	7, 6	Sets the tone amplitude	-36.0 dBFS to 0.0 dBFS (-18.0 dBFS)
Test Tone 1 kHz Level	7, 7		
Test Tone 2 kHz Level	7, 8		
Test Tone 4 kHz Level	7, 9		
Processing > Synchronization			
Audio Track video	7, 3	Enables audio synchronization with the video frame synchronizer	<ul style="list-style-type: none"> • No • Yes
Audio LOV Output Mode	7, 4	Selects the output audio mode when the input video is disrupted	<ul style="list-style-type: none"> • Pass • Mute
Output > AES > Interface			
Output AES 1–8 Interface Control	3, C	Provides a master control for the AES output interface	<ul style="list-style-type: none"> • Individual Control • Set All Unbalanced • Set All Balanced
Output AES (1–8) Interface	3, D • • 4, 5	Sets the type of output for the specified AES channel	<ul style="list-style-type: none"> • Unbalanced • Balanced
Output > AES > Source Selection			
Output AES (1A–8B) Source Select	4, 6 • • 5, 6	Sets the source for output for the specified AES channel	<ul style="list-style-type: none"> • AES (1A–8B) default Ch 1A-8B: the AES that corresponds to the specified AES channel (e.g., for Output 2A, the default output is AES 2A) • AES (1–8) Sum • Test Tone 400Hz • Test Tone 1kHz • Test Tone 2kHz • Test Tone 4kHz • Mute • EBU R68 • SMPTE RP155

Table 4-2. APM6800+/APM6801+ Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Output > AES > Word Length			
Output AES (1–8) Word Length	5, 7 • • 5, E	Adjusts the sample resolution for output of the specified AES channel	<ul style="list-style-type: none"> • 24 bits • 20 bits • 16 bits
Output > AES audio			
Output AES (1A–8B) Format Feedback		Reports the AES format (PCM/non-PCM) of specified AES output audio channel	<ul style="list-style-type: none"> • PCM • Non-PCM

Dolby Decoder Options (APM6800-D1 + D/APM6801-D1 + D)

In addition to the APM6800+/APM6801+ parameters in [Table 4-2](#), APM6800-D1+D/APM6801-D1+D modules also have the parameters from [Table 4-3](#).

Table 4-3. APM6800-D1+D/APM6801-D1+D-Specific Parameters

Parameter Name	Bank, Switch	Function	Options
General			
Dolby Decoder Ver		Firmware version of Dolby Decoder	<string>
Serial Port Interface	0, 1	Selects the serial port interface	<ul style="list-style-type: none"> • RS-232 • RS-422
Input > Genlock/DARS			
Lock Source Select	0, A	Sets the locking source for the module	<ul style="list-style-type: none"> • Genlock • DARS • Dolby Dec Src
Processing > Dolby			
Guard Band Offset	2, B	Adjusts the guard band location	<ul style="list-style-type: none"> • 0 Ln to 524 Ln (525) • 0 Ln to 624 Ln (625) • 0 Ln to 749 Ln (720) • 0 Ln to 1124 Ln (1080)

Table 4-3. APM6800-D1+D/APM6801-D1+D-Specific Parameters

Parameter Name	Bank, Switch	Function	Options
Processing > Dolby > Decoder			
Dolby Decoder Input Select	3, 7	Sets the input audio source for the Dolby E/Dolby Digital Decoder	<ul style="list-style-type: none"> • AES 1A/1B • AES 2A/2B • AES 3A/3B • AES 4A/4B • AES 5A/5B • AES 6A/6B • AES 7A/7B • AES 8A/8B
Dolby Bitstream Format [RO]		Displays the format of the input audio bitstream	<ul style="list-style-type: none"> • Dolby Digital 32-bit • Dolby Digital 16-bit Ch 1 • Dolby Digital 16-bit Ch 2 • Dolby Digital 16-bit Ch 1 and Ch 2 • Dolby E 24-bit • Dolby E 20-bit • Dolby E 16-bit • Non-Dolby
I/P Video Frame Rate [RO]		Displays the status of the video vertical sync input	<ul style="list-style-type: none"> • Unknown • 23.98 fps • 24 fps • 25 fps • 29.97 fps • 30 fps • 50 fps • 59.94 fps • 60 fps
Dolby E Frame Rate [RO]		Displays the frame rate of the associated Dolby E bitstream	<ul style="list-style-type: none"> • Unknown • 23.98 fps • 24 fps • 25 fps • 29.97 fps • 30 fps • 50 fps • 59.94 fps • 60 fps
Video Frame Sync Status [RO]		Displays the status of the video vertical sync input	<ul style="list-style-type: none"> • Present at Dolby E Rate • Valid - Not at Dolby E Rate • Unknown
Aux Channel Output Mode	3, A	Sets the downmix mode for the two-channel auxiliary output	<ul style="list-style-type: none"> • Lt/Rt • Lo/Ro • Mono • Mute
Non-Dolby Latency Select	3, 8	Specifies the main channel decoder latency for PCM bitstreams	<ul style="list-style-type: none"> • Single Frame • Minimum
Processing > Dolby > Channel Status			
Dolby Dec (1–8) Status [RO]		Displays the current status of decoded Dolby audio	<ul style="list-style-type: none"> • Normal • Silence • Peak
Dolby Dec Aux L Status [RO]		Displays the current status of decoded Dolby audio	<ul style="list-style-type: none"> • Normal • Silence • Peak

Table 4-3. APM6800-D1 +D/APM6801-D1 +D-Specific Parameters

Parameter Name	Bank, Switch	Function	Options
Dolby Dec Aux R Status [RO]		Displays the current status of decoded Dolby audio	<ul style="list-style-type: none"> • Normal • Peak • Silence
Processing > Dolby > Delay			
Dolby Decoder Ch (1–8) Delay	1, F • • 2, 7	Adjusts the delay (in ms) for the specified Dolby decoder channel	0.00 to 2500.00
Dolby Decoder Aux L Delay	2, 8	Adjusts the delay (in ms) for the Dolby decoder channel aux L	0.00 to 2500.00
Dolby Decoder Aux R Delay	2, 9	Adjusts the delay (in ms) for the Dolby decoder channel aux R	0.00 to 2500.00

Table 4-3. APM6800-D1+D/APM6801-D1+D-Specific Parameters

Parameter Name	Bank, Switch	Function	Options
Output > AES > Source Selection			
Output AES (1A–8B) Source Select	4, 6 . . 5, 6	Sets the source for output for the specified AES channel	<ul style="list-style-type: none"> • AES (1A–8B) default Ch 5A-8B: the AES that corresponds to the specified AES channel (e.g., for Output 5A, the default output is AES 5A) • AES (1–8) Sum • Dolby Decoder Ch (1–8) default 1A is Dolby Ch 1 default 1B is Dolby Ch 2 default 2A is Dolby Ch 3 default 2B is Dolby Ch 4 default 3A is Dolby Ch 5 default 3B is Dolby Ch 6 default 4A is Dolby Ch 7 default 4B is Dolby Ch 8 • Dolby Decoder Aux L • Dolby Decoder Aux R • Dolby Decoder Ch 1/2 Sum • Dolby Decoder Ch 3/4 Sum • Dolby Decoder Ch 5/6 Sum • Dolby Decoder Ch 7/8 Sum • Dolby Decoder Aux L/R Sum • Test Tone 400Hz • Test Tone 1kHz • Test Tone 2kHz • Test Tone 4kHz • Mute • EBU R68 • SMPTE RP155

APM6800-D2+D/APM6801-D2+D Parameters

In addition to the APM6800+/APM6801+ parameters in [Table 4-2](#), APM6800-D2+D/APM6801-D2+D modules also have the parameters from [Table 4-4](#).

Table 4-4. APM6800-D2+D/APM6801-D2+D Parameters

Parameter Name	Bank, Switch	Function	Options
General			
Dolby Encoder Ver		Displays the version number of the firmware	<string>
Serial Port Interface	0, 1	Sets the serial port interface	<ul style="list-style-type: none"> • RS-232 • RS-422
Input > Genlock/DARS			
Lock Source Select	0, A	Sets the locking source for the module	<ul style="list-style-type: none"> • Genlock • DARS • Dolby Enc Ch 1 Src
Processing > Dolby			
Guard Band Offset	2, B	Adjusts the guard band location	<ul style="list-style-type: none"> • 0 Ln to 524 Ln (525) • 0 Ln to 624 Ln (625) • 0 Ln to 749 Ln (720) • 0 Ln to 1124 Ln (1080)

Table 4-4. APM6800-D2+D/APM6801-D2+D Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Processing > Dolby > Encoder			
Dolby Encoder In (1–8)	2, C • • 3, 4	Sets audio source for the specified Dolby encoder	<ul style="list-style-type: none"> • AES 1A (default: 1) • AES 1B (default: 2) • AES 2A (default: 3) • AES 2B (default: 4) • AES 3A (default: 5) • AES 3B (default: 6) • AES 4A (default: 7) • AES 4B (default: 8) • AES 5A • AES 5B • AES 6A • AES 6B • AES 7A • AES 7B • AES 8A • AES 8B • AES 1 Sum • AES 2 Sum • AES 3 Sum • AES 4 Sum • AES 5 Sum • AES 6 Sum • AES 7 Sum • AES 8 Sum • Test Tone 400Hz • Test Tone 1kHz • Test Tone 2kHz • Test Tone 4kHz • Mute • EBU R68 • SMPTE RP155
Encoder Status [RO]		Indicates the operational status of the encoder	<ul style="list-style-type: none"> • Encoding Active • Encoding Stopped • Pass-through Mode
Video Frame Sync Status [RO]		Indicates the status of the external video reference signal	<ul style="list-style-type: none"> • Present - Dolby E Rate • Valid - Not Dolby E Rate • Invalid
Reference Frame Rate [RO]		Indicates the reference video frame rate	<ul style="list-style-type: none"> • Unknown • 23.98 fps • 24 fps • 25 fps • 29.97 fps • 30 fps • 50 fps • 59.94 fps • 60 fps

Table 4-4. APM6800-D2+D/APM6801-D2+D Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Ext. Metadata Status [RO]		Indicates external metadata status	<ul style="list-style-type: none"> • Not Present • Invalid • Valid • Valid AC-3 • Valid AC-3 with BSI
Metadata Reversion Status		Indicates if internal or external Metadata is being used	<ul style="list-style-type: none"> • Internal • External
Frame Rate	3, 5	Specifies the frame rate of the Dolby bitstream	<ul style="list-style-type: none"> • Auto • 23.98 fps • 24 fps • 25 fps • 29.97 fps • 30 fps
Dolby Bit Depth	3, 6	Specifies the number of bits per word within the Dolby bitstream	<ul style="list-style-type: none"> • 20 bit • 16 bit
Metadata Source	12, 3	Selects the source of metadata to be included in the Dolby E metadata segment	<ul style="list-style-type: none"> • External • Internal
Processing > Dolby > Encoder > Metadata Generator			
Program Configuration	12, 2	Specifies the program configuration of the Dolby bitstream	<ul style="list-style-type: none"> • 2 + 2x1 • 2 + 4x1 • 2 + 6x1 • 2x2 + 2x1 • 2x2 + 4x1 • 3x2 • 3x2 + 2x1 • 4 • 4x1 • 4 + 2 • 4 + 2x1 • 4 + 4 • 4 + 2x2 • 4 + 2 + 2x1 • 4 + 4x1 • 4x2 • 5.1 • 5.1 + 2 • 5.1 + 2x1 • 6x1 • 7.1 • 7.1 Screen • 8x1
Processing > Dolby > Encoder > Metadata Generator > Subprogram 1			
Program ID		Specifies the program ID	<ul style="list-style-type: none"> • Program 1 • Program 2 • Program 3 • Program 4 • Program 5 • Program 6 • Program 7 • Program 8

Table 4-4. APM6800-D2+D/APM6801-D2+D Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Bitstream Mode	12, 5	Specifies the AC-3 bitstream mode	<ul style="list-style-type: none"> • Complete Main • Music and Effects • Visually Impaired • Hearing Impaired • Dialogue • Commentary • Emergency • Voice over • Karaoke
Coding Mode	12, 6	Specifies the AC-3 coding mode	<ul style="list-style-type: none"> • 1/0 (C) • 2/0 (L-R) • 3/0 (L-C-R) • 2/1 (L-R-S) • 3/1 (L-C-R-S) • 2/2 (L-R-SL-SR) • 3/2 (L-C-R-SL-SR)
Surround Mode	12, 7	Specifies whether or not the program is a Dolby Surround encoded stereo mix	<ul style="list-style-type: none"> • Unknown • No • Yes
Low Freq Effect Ch	12, 8	Specifies the status of the AC-3 low frequency effect channel	<ul style="list-style-type: none"> • On • Off
Dialog Normalization	12, 9	Specifies the average dialogue level relative to 100%	-31 dBFS to -1 dBFS (-27 dBFS)
Aud. Production Info	12, A	Indicates whether or not audio production parameters exist	<ul style="list-style-type: none"> • Yes • No
AC-3 Mix Level	12, B	Specifies the acoustic sound pressure level used during final audio mixing	80 dB SPL to 111 dB SPL (105 dB SPL)
Room Type	12, C	Specifies the type/calibration of the mixing room	<ul style="list-style-type: none"> • Not specified • Large Room- X Curve Mon • Small Room- Flat Mon
Copyright Protected	12, D	Indicates whether or not the program is copyright protected	<ul style="list-style-type: none"> • Yes • No
Original Bitstream	12, E	Specifies the AC-3 original bitstream flag	<ul style="list-style-type: none"> • Yes • No
EXT BSII Present	12, F	Indicates whether or not extended BSII metadata is present	<ul style="list-style-type: none"> • Yes • No

Table 4-4. APM6800-D2+D/APM6801-D2+D Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Ext Stereo Downmix	13, 1	Indicates the preferred type of stereo downmix	<ul style="list-style-type: none"> • Not specified • LtRt Preferred • LoRo Preferred
Ext LtRt Ctr Mix Lvl	13, 2	Indicates the nominal LtRt downmix of the center channel	<ul style="list-style-type: none"> <li style="width: 50%;">• +3.0 dB <li style="width: 50%;">• -3.0 dB <li style="width: 50%;">• +1.5 dB <li style="width: 50%;">• -4.5 dB <li style="width: 50%;">• 0.0 dB <li style="width: 50%;">• -6.0 dB <li style="width: 50%;">• -1.5 dB <li style="width: 50%;">• -Inf dB
Ext LtRt Surr Mix Lvl	13, 3	Indicates the nominal LtRt downmix of the surround channel(s)	<ul style="list-style-type: none"> <li style="width: 50%;">• -1.5 dB <li style="width: 50%;">• -6.0 dB <li style="width: 50%;">• -3.0 dB <li style="width: 50%;">• -Inf dB <li style="width: 50%;">• -4.5 dB
Ext LoRo Ctr Mix Lvl	13, 4	Indicates the nominal LoRo downmix of the center channel	<ul style="list-style-type: none"> <li style="width: 50%;">• +3.0 dB <li style="width: 50%;">• -3.0 dB <li style="width: 50%;">• +1.5 dB <li style="width: 50%;">• -4.5 dB <li style="width: 50%;">• 0.0 dB <li style="width: 50%;">• -6.0 dB <li style="width: 50%;">• -1.5 dB <li style="width: 50%;">• -Inf dB
Ext LoRo Surr Mix Lvl	13, 5	Indicates the nominal LoRo downmix of the surround channel(s)	<ul style="list-style-type: none"> <li style="width: 50%;">• -1.5 dB <li style="width: 50%;">• -6.0 dB <li style="width: 50%;">• -3.0 dB <li style="width: 50%;">• -Inf dB <li style="width: 50%;">• -4.5 dB
Ext BSI2 Present	13, 6	Indicates whether or not extended BSI2 metadata is present	<ul style="list-style-type: none"> • Yes • No
Ext Surr EX Mode	13, 7	Indicates if the program has been encoded in Surround EX	<ul style="list-style-type: none"> • Unknown • No • Yes
Ext A/D Type	13, 9	Indicates the type of A/D used to capture the program	<ul style="list-style-type: none"> • Standard • HDCD
DC Highpass Flt	13, A	Indicates the AC-3 encoder DC highpass filter status	<ul style="list-style-type: none"> • Enable • Disable
B/W Lowpass Flt	13, B	Indicates the AC-3 encoder bandwidth lowpass filter status	<ul style="list-style-type: none"> • Enable • Disable
LFE Ch Lowpass Flt	13, C	Indicates the AC-3 encoder LFE channel lowpass filter status	<ul style="list-style-type: none"> • Enable • Disable
Srnd Phase Shift Flt	13, D	Indicates the AC-3 encoder surround 90 degrees phase shift filter status	<ul style="list-style-type: none"> • Enable • Disable
Srnd Ch Attenuator	13, E	Indicates the AC-3 encoder 3 dB surround channel attenuator status	<ul style="list-style-type: none"> • Enable • Disable

Table 4-4. APM6800-D2+D/APM6801-D2+D Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
RF Cmpr Profile	14, 1	Indicates the AC-3 encoder RF compression profile	<ul style="list-style-type: none"> • None • Film- Standard • Film- Light • Music- Standard • Music- Light • Speech
Line Mode Profile	14, 3	Indicates the AC-3 encoder dynamic range compression profile	<ul style="list-style-type: none"> • None • Film- Standard • Film- Light • Music- Standard • Music- Light • Speech
Processing > Dolby > Channel Status			
Dolby Enc L Status [RO]		Displays the current status of encoded Dolby audio	<ul style="list-style-type: none"> • Normal • Silence • Peak
Dolby Enc R Status [RO]		Displays the current status of encoded Dolby audio	<ul style="list-style-type: none"> • Normal • Silence • Peak
Processing > Dolby > Delay			
Dolby Encoder Output Delay	2, A	Adjusts the delay (in ms) for Dolby encoder output	0.00 to 2500.00 ms

Table 4-4. APM6800-D2+D/APM6801-D2+D Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Output > AES > Source Selection			
Output AES (1A–8B) Source Select	4, 6 • • 5, 6	Sets the source for output for the specified AES channel	<ul style="list-style-type: none"> • AES (1A–8B) default Ch 2A-8B: the AES that corresponds to the specified AES channel (e.g., for Output 2A, the default output is AES 2A) • AES (1B–8B) • AES (1–8) Sum • Dolby Enc Out A (Left) default Ch 1A • Dolby Enc Out B (Right) default Ch 1B • Test Tone 400Hz • Test Tone 1kHz • Test Tone 2kHz • Test Tone 4kHz • Mute • EBU R68 • SMPTE RP155
Output > Metadata			
Meta Revert Md	14, 4	Specifies the metadata output if incoming bitstream is lost or corrupted	<ul style="list-style-type: none"> • Internal • Last used • Stop

APM6800-D3+D/APM6801-D3+D Parameters

In addition to the APM6800+/APM6801+ parameters in [Table 4-2](#), APM6800-D3+D/APM6801-D3+D modules also have the parameters from [Table 4-5](#).

Table 4-5. APM6800-D3+D/APM6801-D3+D Parameters

Parameter Name	Bank, Switch	Function	Options
General			
Dolby EncoderVer [RO]		Displays the version number of the firmware	<string>
Serial Port Interface	0, 1	Sets the serial port interface	<ul style="list-style-type: none"> • RS-232 • RS-422
Input > Genlock/DARS			
Lock Source Select	0, A	Sets the locking source for the module	<ul style="list-style-type: none"> • Genlock • DARS • Dolby Enc Ch 1 Src
Processing > Dolby			
Guard Band Offset	2, B	Adjusts the guard band location	<ul style="list-style-type: none"> • 0 Ln to 524 Ln (525) • 0 Ln to 624 Ln (625) • 0 Ln to 749 Ln (720) • 0 Ln to 1124 Ln (1080)

Table 4-5. APM6800-D3+D/APM6801-D3+D Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Processing > Dolby > Encoder			
Dolby Encoder In (1–6)	2, C • • 3, 2	Sets audio source for the specified Dolby encoder	<ul style="list-style-type: none"> • AES 1A (default: 1) • AES 1B (default: 2) • AES 2A (default: 3) • AES 2B (default: 4) • AES 3A (default: 5) • AES 3B (default: 6) • AES 4A • AES 4B • AES 5A • AES 5B • AES 6A • AES 6B • AES 7A • AES 7B • AES 8A • AES 8B • AES 1 Sum • AES 2 Sum • AES 3 Sum • AES 4 Sum • AES 5 Sum • AES 6 Sum • AES 7 Sum • AES 8 Sum • Test Tone 400Hz • Test Tone 1kHz • Test Tone 2kHz • Test Tone 4kHz • Mute • EBU R68 • SMPTE RP155
Encoder Status [RO]		Indicates the operational status of the encoder	<ul style="list-style-type: none"> • Encoding Active • Encoding Stopped • Pass-through Mode
Ext. Metadata Status [RO]		Indicates external metadata status	<ul style="list-style-type: none"> • Not Present • Invalid • Valid • Valid AC-3 • Valid AC-3 with BSI
Metadata Reversion Status [RO]		Indicates if internal or external Metadata is being used	<ul style="list-style-type: none"> • Internal • External

Table 4-5. APM6800-D3+D/APM6801-D3+D Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Data Rate	12, 1	Controls the data rate of the output of the Dolby Digital encoder	<ul style="list-style-type: none"> • Auto 384 kbps • Auto 448 kbps • 56 kbps • 64 kbps • 80 kbps • 96 kbps • 112 kbps • 128 kbps • 160 kbps • 192 kbps • 224 kbps • 256 kbps • 320 kbps • 384 kbps • 448 kbps • 512 kbps • 576 kbps • 640 kbps
Metadata Source	12, 4	Selects the source of the metadata used by the encoder	<ul style="list-style-type: none"> • Ext - Prog 1 • Ext - Prog 2 • Ext - Prog 3 • Ext - Prog 4 • Ext - Prog 5 • Ext - Prog 6 • Ext - Prog 7 • Ext - Prog 8 • Internal
Processing > Dolby > Encoder > Metadata Generator > Subprogram 1			
Bitstream Mode	12, 5	Specifies the AC-3 bitstream mode	<ul style="list-style-type: none"> • Complete Main • Music and Effects • Visually Impaired • Hearing Impaired • Dialogue • Commentary • Emergency • Voice over • Karaoke
Coding Mode	12, 6	Specifies the AC-3 coding mode	<ul style="list-style-type: none"> • 1/0 (C) • 2/0 (L-R) • 3/0 (L-C-R) • 2/1 (L-R-S) • 3/1 (L-C-R-S) • 2/2 (L-R-SL-SR) • 3/2 (L-C-R-SL-SR)
Surround Mode	12, 7	Specifies whether or not the program is a Dolby Surround encoded stereo mix	<ul style="list-style-type: none"> • Unknown • No • Yes

Table 4-5. APM6800-D3+D/APM6801-D3+D Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Low Freq Effect Ch	12, 8	Specifies the status of the AC-3 low frequency effect channel	<ul style="list-style-type: none"> • On • Off
Dialog Normalization	12, 9	Specifies the average dialogue level relative to 100%	-31 dBFS to -1 dBFS (-27 dBFS)
Aud. Production Info	12, A	Indicates whether or not audio production parameters exist	<ul style="list-style-type: none"> • Yes • No
AC-3 Mix Level	12, B	Specifies the acoustic sound pressure level used during final audio mixing	80 dB SPL to 111 dB SPL (105 dB SPL)
Room Type	12, C	Specifies the type/calibration of the mixing room	<ul style="list-style-type: none"> • Not specified • Large Room- X Curve Mon • Small Room- Flat Mon
Copyright Protected	12, D	Indicates whether or not the program is copyright protected	<ul style="list-style-type: none"> • Yes • No
Original Bitstream	12, E	Specifies the AC-3 original bitstream flag	<ul style="list-style-type: none"> • Yes • No
EXT BSI1 Present	12, F	Indicates whether or not extended BSI1 metadata is present	<ul style="list-style-type: none"> • Yes • No
Ext Stereo Downmix	13, 1	Indicates the preferred type of stereo downmix	<ul style="list-style-type: none"> • Not specified • LtRt Preferred • LoRo Preferred
Ext LtRt Ctr Mix Lvl	13, 2	Indicates the nominal LtRt downmix of the center channel	<ul style="list-style-type: none"> • +3.0 dB • +1.5 dB • 0.0 dB • -1.5 dB • -3.0 dB • -4.5 dB • -6.0 dB • -Inf dB
Ext LtRt Surr Mix Lvl	13, 3	Indicates the nominal LtRt downmix of the surround channel(s)	<ul style="list-style-type: none"> • -1.5 dB • -3.0 dB • -4.5 dB • -6.0 dB • -Inf dB
Ext LoRo Ctr Mix Lvl	13, 4	Indicates the nominal LoRo downmix of the center channel	<ul style="list-style-type: none"> • +3.0 dB • +1.5 dB • 0.0 dB • -1.5 dB • -3.0 dB • -4.5 dB • -6.0 dB • -Inf dB
Ext LoRo Surr Mix Lvl	13, 5	Indicates the nominal LoRo downmix of the surround channel(s)	<ul style="list-style-type: none"> • -1.5 dB • -3.0 dB • -4.5 dB • -6.0 dB • -Inf dB

Table 4-5. APM6800-D3+D/APM6801-D3+D Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Ext BSI2 Present	13, 6	Indicates whether or not extended BSI2 metadata is present	<ul style="list-style-type: none"> • Yes • No
Ext Surr EX Mode	13, 7	Indicates if the program has been encoded in Surround EX	<ul style="list-style-type: none"> • Unknown • No • Yes
Ext Dolby Headphone	13, 8	Indicates if a program has been encoded in Dolby Headphone	<ul style="list-style-type: none"> • Unknown • No • Yes
Ext A/D Type	13, 9	Indicates the type of A/D used to capture the program	<ul style="list-style-type: none"> • Standard • HDCD
DC Highpass Flt	13, A	Indicates the AC-3 encoder DC highpass filter status	<ul style="list-style-type: none"> • Enable • Disable
B/W Lowpass Flt	13, B	Indicates the AC-3 encoder bandwidth lowpass filter status	<ul style="list-style-type: none"> • Enable • Disable
LFE Ch Lowpass Flt	13, C	Indicates the AC-3 encoder LFE channel lowpass filter status	<ul style="list-style-type: none"> • Enable • Disable
Srnd Phase Shift Flt	13, D	Indicates the AC-3 encoder surround 90 degrees phase shift filter status	<ul style="list-style-type: none"> • Enable • Disable
Srnd Ch Attenuator	13, E	Indicates the AC-3 encoder 3 dB surround channel attenuator status	<ul style="list-style-type: none"> • Enable • Disable
Compression Profile Present	13, F	Indicates whether the bitstream contains compression profile settings	<ul style="list-style-type: none"> • No • Yes
RF Cmpr Profile	14, 1	Indicates the AC-3 encoder RF compression profile	<ul style="list-style-type: none"> • None • Film- Standard • Film- Light • Music- Standard • Music- Light • Speech
Dyn Range Profile Pres	14, 2	Indicates whether the bitstream contains dynamic range profile settings	<ul style="list-style-type: none"> • No • Yes

Table 4-5. APM6800-D3+D/APM6801-D3+D Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Line Mode Profile	14, 3	Indicates the AC-3 encoder dynamic range compression profile	<ul style="list-style-type: none"> • None • Film- Standard • Film- Light • Music- Standard • Music- Light • Speech
Processing > Dolby > Channel Status			
Dolby Enc L Status [RO]		Displays the current status of encoded Dolby audio	<ul style="list-style-type: none"> • Normal • Silence • Peak • Not Present
Dolby Enc R Status [RO]		Displays the current status of encoded Dolby audio	<ul style="list-style-type: none"> • Normal • Silence • Peak • Not Present
Processing > Dolby > Delay			
Dolby Encoder Output Delay	2, A	Adjusts the delay (in ms) for Dolby encoder output	0.00 to 2500.00 ms
Output > Metadata			
Meta Revert Md	14, 4	Specifies the metadata output if incoming bitstream is lost or corrupted	<ul style="list-style-type: none"> • Internal • Last used • Stop

APM6801 + AAC + Parameters

APM6801+AAC+D modules have *only* the parameters from [Table 4-6](#).

Table 4-6. APM6801+AAC+D Parameters

Parameter Name	Bank, Switch	Function	Options
General			
Serial Number [RO]		Displays the serial number of the module	<string>
AAC Encoder Ver[RO]		Displays the version number of the firmware	<string>
Factory Recall	0, F	Recalls the factory default settings	<ul style="list-style-type: none"> • Off • On

Table 4-6. APM6801+AAC+D Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Input > AES			
Input AES (1–8) Present [RO]		Displays the presence of AES input for the specified channel	<ul style="list-style-type: none"> No Yes
Input AES (1A–8B) Format Feedback [RO]		Displays the detected format (PCM/Non-PCM) for the specified channel	<ul style="list-style-type: none"> PCM Non-PCM Unknown
Input > Status			
Input AES (1A–8B) Status [RO]		Displays the current status of the audio input channel	<ul style="list-style-type: none"> Normal Silence Peak Not Present
Input > Genlock/DARS			
Lock Source Select	0, A	Sets the locking source for the module	<ul style="list-style-type: none"> Genlock DARS AAC Enc Ch 1 Src
Lock Source [RO]		Displays the locking source for the module	<ul style="list-style-type: none"> Genlock DARS AES 1 AES 2 AES 3 AES 4 AES 5 AES 6 AES 7 AES 8
Genlock Input Source Select	0, B	Sets the reference video input source	<ul style="list-style-type: none"> Frame Reference Card Reference
Genlock Video Present [RO]		Displays the presence of the reference video signal	<ul style="list-style-type: none"> No Yes
Genlock Video Locked [RO]		Displays the locked status of the reference video signal	<ul style="list-style-type: none"> No Yes
Genlock Video Standard Feedback [RO]		Displays the detected reference video standard	<ul style="list-style-type: none"> Unknown 1080P 25 720P 59.94 720P 60 1080P 23.98 1080P 24 1080P 29.97 1080P 30 1080I 25 1080I 29.97 1080I 30 SD 525 SD 625 720P 50 1080PsF 23.98 1080PsF 24 720P 29.97 720P 30 720P 25 720P 23.98 720P 24

Table 4-6. APM6801+AAC+D Parameters (*Continued*)

Parameter Name	Bank, Switch	Function	Options
DARS Input Select	0, C	Sets the source of the DARS input signal	<ul style="list-style-type: none"> • Input 1 (Cable) • Input 2 (Module)
DARS Input Present [RO]		Displays the presence of the DARS input signal	<ul style="list-style-type: none"> • No • Yes
DARS Locked to Reference [RO]		Displays the locked status of the DARS input signal	<ul style="list-style-type: none"> • No • Yes
Processing			
Fade Rate	3, B	Controls the rate of fading (in seconds) when channels are swapped or muted	0.0 to 10.0 (0.1)
Processing > Sample Rate Conversion			
Input AES (1–8) SRC Control	0, 2 • • 0, 9	Controls the insertion of the audio sample rate converter in the processing path for input AES of the specified channel	<ul style="list-style-type: none"> • Auto • On • Off
Processing > AES Delay			
Input AES (1A–8B) Delay	0, D • • 1, E	Adjusts the delay (in ms) for input audio AES of the specified channel	0.00 to 2500.00

Table 4-6. APM6801+AAC+D Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Processing > AAC > Encoder			
AAC Encoder In (1–6)	6, 1 • • 6, 6	Sets audio source for the specified AAC encoder	<ul style="list-style-type: none"> • AES 1A (default: 1) • AES 1B (default: 2) • AES 2A (default: 3) • AES 2B (default: 4) • AES 3A (default: 5) • AES 3B (default: 6) • AES 4A • AES 4B • AES 5A • AES 5B • AES 6A • AES 6B • AES 7A • AES 7B • AES 8A • AES 8B • AES 1 Sum • AES 2 Sum • AES 3 Sum • AES 4 Sum • AES 5 Sum • AES 6 Sum • AES 7 Sum • AES 8 Sum • Test Tone 400Hz • Test Tone 1kHz • Test Tone 2kHz • Test Tone 4kHz • Mute • EBU R68 • SMPTE RP155
Standard		Controls the AAC encoder standard	<ul style="list-style-type: none"> • AAC-LC • AAC-HE
Data Rate		Controls the data rate of the output of the AAC encoder Note: Available data rates are based on mode selection.	<ul style="list-style-type: none"> • 24000 • 32000 • 40000 • 48000 • 56000 • 64000 • 80000 • 96000 • 112000 • 128000 • 160000 • 192000 • 224000 • 240000 • 256000 • 280000 • 320000 • 384000 • 448000 • 512000 • 576000 • 640000 • 800000

Table 4-6. APM6801+AAC+D Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Mode		Controls the AAC encoder mode	<ul style="list-style-type: none"> • Mono • Dual-Mono • Stereo • Parametric-Stereo • Surround
Transport		Controls the AAC encoder transport	<ul style="list-style-type: none"> • Auto • ADTS • LOAS
Version		Controls the AAC encoder version.	<ul style="list-style-type: none"> • MPEG2 • MPEG4
SBR		Controls the AAC encoder SBR	<ul style="list-style-type: none"> • Implicit • Implicit-Hierarchal
Output > AES > Interface			
Output AES 1–8 Interface Control	3, C	Provides a master control for the AES output interface	<ul style="list-style-type: none"> • Individual Control • Set All Unbalanced • Set All Balanced
Output AES (1–8) Interface	3, D • • 4, 5	Sets the type of output for the specified AES channel	<ul style="list-style-type: none"> • Unbalanced • Balanced

Table 4-6. APM6801+AAC+D Parameters (Continued)

Parameter Name	Bank, Switch	Function	Options
Output > AES > Source Selection			
Output AES (1A–8B) Source Select	4, 6 • • 5, 6	Sets the source for output for the specified AES channel	<ul style="list-style-type: none"> • AES (1A–8B) default Ch 2A-8B: the AES that corresponds to the specified AES channel (e.g., for Output 2A, the default output is AES 2A) • AES (1B–8B) • AES (1–8) Sum • AAC Enc Out A (Left) default Ch 1A • AAC Enc Out B (Right) default Ch 1B • Test Tone 400Hz • Test Tone 1kHz • Test Tone 2kHz • Test Tone 4kHz • Mute • EBU R68 • SMPTE RP155
Output > AES > Word Length			
Output AES (1–8) Word Length	5, 7 • • 5, E	Adjusts the sample resolution for output of the specified AES channel	<ul style="list-style-type: none"> • 24 bits • 20 bits • 16 bits

Neural Audio Parameters

In addition to the APM6800+/APM6801+ parameters in [Table 4-2](#), all APM6801UM+, APM6801DM+, APM6801MM+, APM6801LC+, APM6801LC+6+2+, APM6801LC+8+, APM6801LC+DM+, APM6801UM+LC+, APM6801DM+LC+, and APM6801MM+LC+ modules also have the common parameters from [Table 4-7](#).

In addition, each module has parameters specific to its audio processing and output:

- The APM6801UM+ and APM6801UM+LC+ have the UpMix parameters listed in [Table 4-8 on page 59](#).
- The APM6801DM+, APM6801DM+LC+, and APM6801LC+DM+ have the DownMix parameters listed in [Table 4-9 on page 60](#).
- The APM6801MM+ and APM6801MM+LC+ have the MultiMerge parameters listed in [Table 4-10 on page 61](#).
- The APM6801LC+6+2+, APM6801LC+8+, APM6801LC+DM+, APM6801UM+LC+, APM6801DM+LC+, and APM6801MM+LC+ have the NLC Loudness Control parameters listed in [Table 4-11 on page 62](#).

For more information about Neural Audio options on APM6801+, see [“Appendix A: Neural Audio Packages” on page 79](#).

Neural Common Parameters

In addition to the APM6800+/APM6801+ parameters in [Table 4-2](#), all APM6801UM+, APM6801DM+, APM6801MM+, APM6801LC+, APM6801LC+6+2+, APM6801LC+8+, APM6801LC+DM+, APM6801UM+LC+, APM6801DM+LC+, and APM6801MM+LC+ modules also have the common parameters from [Table 4-7](#)

Table 4-7. APM6801+ Neural Audio Common Parameters

Parameter Name	Bank, Switch	Function	Options
General			
Serial Port Interface	0, 1	Sets the serial port interface	<ul style="list-style-type: none"> • RS-232 • RS-422

Table 4-7. APM6801+ Neural Audio Common Parameters

Parameter Name	Bank, Switch	Function	Options
Input > Neural			
Neural Audio In (1–8)	10, F • • 11, 7	Selects an audio source for the specified Neural audio processor	<ul style="list-style-type: none"> • AES 1A (default for Neural in 1) • AES 1B (default for Neural in 2) • AES 2A (default for Neural in 3) • AES 2B (default for Neural in 4) • AES 3A (default for Neural in 5) • AES 3B (default for Neural in 6) • AES 4A (default for Neural in 7) • AES 4B (default for Neural in 8) • AES 5A • AES 5B • AES 6A • AES 6B • AES 7A • AES 7B • AES 8A • AES 8B • AES 1 Sum • AES 2 Sum • AES 3 Sum • AES 4 Sum • AES 5 Sum • AES 6 Sum • AES 7 Sum • AES 8 Sum • Test Tone 400Hz • Test Tone 1kHz • Test Tone 2kHz • Test Tone 4kHz • Mute • EBU R68 • SMPTE RP155

Table 4-7. APM6801+ Neural Audio Common Parameters

Parameter Name	Bank, Switch	Function	Options
Processing > Neural > Delay			
Neural Audio Out (1–8) Delay	11, 8 • • 11, F	Adjusts delay for specified Neural audio output channel	0.000 ms to 2500.000 ms
Output > AES > Source Selection			
Output AES (1A–8B) Source Select	4, 6 • • 5, 6	Sets the source for output for the specified AES channel	<ul style="list-style-type: none"> • AES (1A–8B) default Ch 5A-8B: the AES that corresponds to the specified AES channel (e.g., for Output 5A, the default output is AES 5A) • AES (1–8) Sum • Test Tone 400Hz • Test Tone 1kHz • Test Tone 2kHz • Test Tone 4kHz • Mute • EBU R68 • SMPTE RP155 Neural Audio Ch (1-8) default AES 1A-4B: the Neural audio channel that corresponds to the specified AES channel (e.g., for Output 2A, the default output is Neural audio Ch 3) • Neural Audio Ch 1/2 Sum • Neural Audio Ch 3/4 Sum • Neural Audio Ch 5/6 Sum • Neural Audio Ch 7/8 Sum

Neural Audio UpMix Parameters

In addition to the APM6800+/APM6801+ parameters in [Table 4-2](#), and the common Neural parameters that appear in [Table 4-7 on page 56](#), APM6801DM+ and APM6801UM+LC+ modules also have the parameters from [Table 4-8 on page 59](#).

For more information on Neural Audio UpMix features and functionality, see “DTS Neural® Surround™ UpMix” on page 80.

Table 4-8. Neural Audio UpMix Parameters

Processing > Neural > Upmix			
Output Config	14, 7	Controls the output channel configuration generated by the Upmix.	<ul style="list-style-type: none"> • 2.1 • 3.1 • 4.1 • 5.1
Output Bias	14, 6	Controls the soundstage depth of the upmix. (Values near -1.0 indicate that the soundstage image will be biased toward the surround channels; values near 1.0 indicate that the soundstage image will be biased toward the front channels)	-1.00 to 1.00 (0)
Upmix LFE Mute	14, 8	Mutes the LFE channel output from the upmix	<ul style="list-style-type: none"> • Yes • No
LFE Up Cutoff	14, 9	Controls the cutoff frequency of the low pass filter applied to the LFE channel before output	60 Hz to 140 Hz (80 Hz)
Limiter Enable	14, A	Enables a limiter on the surround output from the upmix	<ul style="list-style-type: none"> • No • Yes
Limiter Threshold	14, B	Sets the upper threshold of the limiter applied to the output	-20 dBFS to 0 dBFS

Neural Audio DownMix Parameters

In addition to the APM6800+/APM6801+ parameters in [Table 4-2](#), and the common Neural parameters that appear in [Table 4-7 on page 56](#), APM6801DM+, APM6801LC+DM+, and APM6801DM+LC+ modules also have the parameters from [Table 4-9](#).

For more information on Neural Audio DownMix features and functionality, see “[APM6801DM+D DTS Neural® Surround™ DownMix](#)” on page 81.

Table 4-9. Neural Audio DownMix Parameters

Parameter Name	Bank, Switch	Function	Options
Processing > Neural > Downmix			
LFE Down Filter En	14, C	Enables a low pass filter to the LFE input to the downmix	<ul style="list-style-type: none"> • No • Yes
LFE Down Cutoff	14, D	Sets the cutoff frequency of the low pass filter applied to the LFE input	60 Hz to 140 Hz (80 Hz)
Limiter Enable	14, E	<p>Enables a limiter on the stereo output of the downmix</p> <p>Note: 6 (5.1) channels of audio can naturally represent more total energy than 2 (stereo) channels of audio. Because of this, content downmixed from 5.1 to stereo will often have higher energy than any of the 5.1 channels individually. You can enable the limiter to protect content from digital 0 clipping and adjust the desired threshold.</p>	<ul style="list-style-type: none"> • No • Yes
Limiter Threshold	14, F	Sets the upper threshold of the limiter applied to the output	-20 dBFS to 0 dBFS

Neural Audio MultiMerge Parameters

In addition to the APM6800+/APM6801+ parameters in [Table 4-2](#), and the common Neural parameters that appear in [Table 4-7 on page 56](#), APM6801MM+ and APM6801MM+LC+ modules also have the parameters from [Table 4-10](#).

For more information on Neural Audio MultiMerge features and functionality, see “[APM6801MM+D DTS Neural® Surround™ MultiMerge](#)” on page 82.

Table 4-10. Neural Audio MultiMerge Parameters

Parameter Name	Bank, Switch	Function	Options
Processing > Neural > MultiMerge			
Input Selection Mode	15, 1	Selects the input selection mode	<ul style="list-style-type: none"> • Mix • Multi • Stereo • Aux • Multi Detect • Stereo Detect • Aux Detect • Multi Aux Stereo
Multimerge Mode	15, 2	Controls the mode of the MultiMerge algorithm	<ul style="list-style-type: none"> • Auto • Pass Through • Up Mix
Detect Threshold	15, 3	Controls the noise floor level for the detection while in Auto mode.	80 dBFS to -50 dBFS (-60 dBFS)
Input Crossfade Time	15, 4	Determines the transition time from one source to another	50 ms to 750 ms (200 ms)
MM Crossfade Time	15, 5	Controls the length of the audio crossfade used on the outputs when switching between Upmix and Passthrough modes automatically	50 ms to 750 ms (200 ms)
Upmix LFE Mute	15, 8	Mutes the LFE channel output from the upmix	<ul style="list-style-type: none"> • Yes • No
LFE Up Cutoff	15, 9	Controls the cutoff frequency of the low pass filter applied to the LFE channel before output	60 Hz to 140 Hz (80 Hz)
LFE Down Filter En	15, 6	Enables a low pass filter to the LFE input to the downmix	<ul style="list-style-type: none"> • No • Yes
LFE Down Cutoff	15, 7	Sets the cutoff frequency of the low pass filter applied to the LFE input	60 Hz to 140 Hz (80 Hz)
Surround Limiter En	15, A	Enables a limiter on the surround output from the multimerge	<ul style="list-style-type: none"> • No • Yes

Table 4-10. Neural Audio MultiMerge Parameters

Parameter Name	Bank, Switch	Function	Options
Surround Threshold	15, B	Sets the upper threshold of the limiter applied to the surround output	-20 dBFS to 0 dBFS
Stereo Limiter en	15, C	Enables a limiter on the stereo output of the multimerge	<ul style="list-style-type: none"> • No • Yes
Stereo Threshold	15, D	Sets the upper threshold of the limiter applied to the stereo output	-20 dBFS to 0 dBFS

Neural Loudness Control Parameters

In addition to the APM6800+/APM6801+ parameters in [Table 4-2](#) and the common Neural parameters that appear in [Table 4-7 on page 56](#), APM6801LC+, APM6801LC+6+2+, APM6801LC+8+, APM6801LC+DM+, APM6801DM+LC+, APM6801DM+LC+, and APM6801LC+DM+ modules also have the parameters from [Table 4-11](#).

For more information on Neural Loudness Control features and functionality, see [“Neural Loudness Control” on page 84](#).

For the APM6801LC+6+2+ modules, the Group 1 parameters are repeated again for Group 2. For APM6801LC+8+ modules, these parameters appear for Groups 1, 2, 3, and 4.

Table 4-11. Neural Audio Loudness Control Parameters

Parameter Name	Bank, Switch	Function	Options
Processing > Neural > Loudness Control			
Preset Select		Selects a loudness control preset	<ul style="list-style-type: none"> • (select preset) • Mild • Medium • Aggressive
Processing > Neural > Loudness Control > Group 1 Processing > Neural > Loudness Control > Group 2 (APM6801LC+6+2+, and APM6801LC+8+ only) Processing > Neural > Loudness Control > Group 3 (APM6801LC+8+ only) Processing > Neural > Loudness Control > Group 4 (APM6801LC+8+ only)			
Bypass		Loudness Control bypass	<ul style="list-style-type: none"> • LC1 enable • LC1 bypass
Target Level		Loudness Control Target Level	-31 dBFS to -1 dBFS (-27 dBFS)
LC Ratio		Loudness Control Ratio	0.00 to 1.00 (0.95)
Upper Threshold		Loudness Control Upper Threshold	0 dB to 12 dB (0 dB)

Table 4-11. Neural Audio Loudness Control Parameters

Parameter Name	Bank, Switch	Function	Options
Lower Threshold		Loudness Control lower threshold	-12 dB to 0 dB (0 dB)
Freeze Window		Loudness Control freeze window	0.0 to 6.0 (1.0)
Noise Floor		Loudness Control Noise Floor	-60 dBFS to -40 dBFS (-50 dBFS)
Attack Time		Loudness Control Attack Time	0 ms to 120 ms (20 ms)
Release Time		Loudness Control Release Time	40 ms to 200 ms (120 ms)
Freq Compensation		Loudness Control Shape Reference	<ul style="list-style-type: none"> • Off • Low • Medium • High
Compressor Threshold		Loudness Control Compressor Threshold	0 dB to 12 dB (5 dB)
Compressor Ratio		Loudness Control Compressor Ratio	0.0 to 1.0 (0.4)
Output Limiter En		Loudness Control Output Limiter Enable	<ul style="list-style-type: none"> • No • Yes
Output Limiter Threshold		Loudness Control Output Limiter Threshold	-20 dBFS to 0 dBFS

LEDs and Alarms

Monitoring LEDs

The modules have 13 monitoring LEDs that serve as a quick monitoring reference. [Figure 4-1](#) shows the location of the monitoring LEDs on a typical 6800+ module. [Table 4-12 on page 65](#) describes the meaning of the card-edge LEDs.

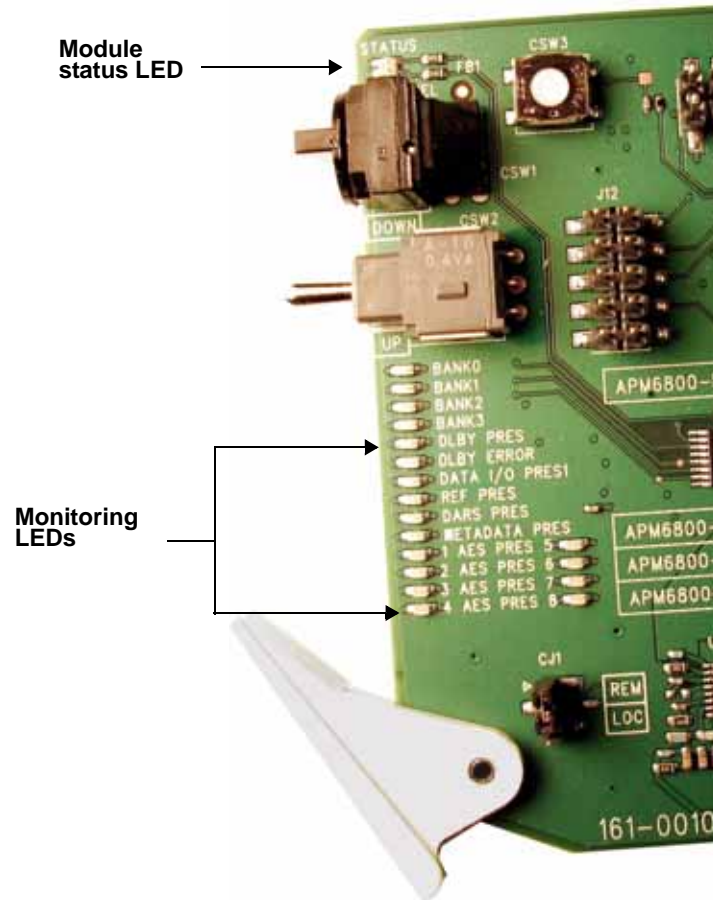


Figure 4-1. Location of Card-Edge LEDs

Module Status LEDs

If the LED listed in [Table 4-12](#) is off, then the corresponding input is either not present or not in error.

Table 4-12. LED Status Indicators

LED	Name	Description	Color Indication
1	DLBY PRES	Dolby signal is present (APM6800-D1+D/APM6801-D1+D only)	Green
2	DLBY ERR	Dolby submodule error	Red
3	DATA I/O PRES	DATA I/O signal is present	Green
4	REF PRES	Video reference is present	Green
5	DARS PRES	DARS reference signal is present	Green
6	METADATA PRES	External metadata is present (APM6800-D2+D/APM6801-D2+D and APM6800-D3+D/APM6801-D3+D only)	Green
7	AES1 PRES	AES1 signal is present	Green
8	AES2 PRES	AES2 signal is present	Green
9	AES3 PRES	AES3 signal is present	Green
10	AES4 PRES	AES4 signal is present	Green
11	AES5 PRES	AES5 signal is present	Green
12	AES6 PRES	AES6 signal is present	Green
13	AES7 PRES	AES7 signal is present	Green
14	AES8 PRES	AES8 signal is present	Green

The modules do not have any card-edge alarms. Instead, module status LEDs on the corner of the module light up if an error is detected. See [Figure 4-1 on page 64](#) for the location of these LEDs, and [Table 4-13](#) for a definition of the LED colors.

Alarms are usually logged and monitored within software control applications such as CSS Navigator. See the appropriate software control user manual or online help for more information.

Table 4-13. Module Status LED Descriptions

LED Color Sequence	Meaning
Off	There is no power to the module; the module is not operational.
Green	There is power to the module; the module is operating properly.
Red	There is an alarm condition.
Flashing Red	The module has detected a hardware/firmware fault.
Yellow	The module is undergoing configuration.



Note

If the LED is flashing red, please contact your Customer Service representative.

Alarms

If a major or minor alarm is triggered within your module, the Status LED will light red.

Alarms are usually logged and monitored within available software control applications (for example, CSS Navigator). You can only differentiate between major and minor alarms within a software control application. See the appropriate software control user manual or online help for more information.

The following settings can be made for each alarm within the software.

Table 4-14. Alarm Options

Alarm Option	Effect
Enable/Disable	This option toggles between Enabled and Disabled. If the alarm is Enabled , an alarm condition will generate an alarm; but if it is Disabled , the alarm condition will be ignored. The default setting for all alarms is Disabled .
Alarm priority	This setting determines whether a triggered alarm will be reported as major or minor. The range is 1–10. A priority of 6 or higher is a major alarm, and a priority of 5 or lower is a minor alarm
Trigger (s)	This option determines how long an alarm condition must exist (in seconds) before the alarm is triggered. If the alarm level is reached for less time than the Trigger duration, then the alarm will not trigger. Choose any duration from 0 to 7200 (or two hours). If this option is set to 0, the alarm will trigger as soon as the alarm condition exists.
Clear (s)	Determines the amount of time the alarm condition must be in abate in order for the alarm to be turned off. Choose any duration from 0 to 7200 seconds (or two hours). If this option is set to 0, the alarm will clear as soon as the alarm condition ceases.
Ack	When an alarm is active, click here to allow other users on the network to see that you have acknowledged the alarm.

Table 4-15, Table 4-16, Table 4-17, and Table 4-18 on page 70 describe the alarms for each of the modules. You can only identify specific alarms using a software control application

APM6800-D1+D/APM6801-D1+D Alarms**Table 4-15.** APM6800-D1+D/APM6801-D1+D Alarms

Alarm Name	Alarm Option Default Settings		
	Priority	Trigger	Clear
Input AES (1–8) Missing	1 (Minor)	0 sec	2 sec
AES (1A–8B) Peak	6 (Major)	0 sec	0 sec
AES (1A–8B) Silence	1 (Minor)	30 sec	0 sec
Dolby Decoder Ch1/2 Missing	1 (Minor)	0 sec	0 sec
Dolby Decoder Ch3/4 Missing	1 (Minor)	0 sec	0 sec
Dolby Decoder Ch5/6 Missing	1 (Minor)	0 sec	0 sec
Dolby Decoder Ch7/8 Missing	1 (Minor)	0 sec	0 sec
Dolby Decoder Ch(1–8) Peak	6 (Major)	0 sec	0 sec
Dolby Decoder Ch(1–8) Silence	1 (Minor)	30 sec	0 sec
Dolby Decoder Aux Missing	1 (Minor)	0 sec	0 sec
Dolby Decoder AuxL Peak	6 (Major)	0 sec	0 sec
Dolby Decoder AuxL Silence	1 (Minor)	30 sec	0 sec
Dolby Decoder AuxR Peak	6 (Major)	0 sec	0 sec
Dolby Decoder AuxR Silence	1 (Minor)	30 sec	0 sec
Reference Video Missing	6 (Major)	0 sec	2 sec
Reference Video Not Locked	6 (Major)	0 sec	2 sec
DARS Input Missing	1 (Minor)	0 sec	2 sec
DARS Input not Locked	1 (Minor)	0 sec	2 sec
Reference / Dolby Frame Rate Mismatch	6 (Major)	0 sec	2 sec
Dolby Decoder Bitstream Error	6 (Major)	0 sec	2 sec
Dolby / Reference Rate Mismatch	6 (Major)	0 sec	2 sec
Master Mute On	5 (Minor)	0 sec	0 sec
V-Bit Mute On	4 (Minor)	0 sec	0 sec

APM6800-D2+D/APM6801-D2+D Alarms**Table 4-16.** APM6800-D2+D/APM6801-D2+D Alarms

Alarm Name	Alarm Option Default Settings		
	Priority	Trigger	Clear
Input AES (1–8) Missing	1 (Minor)	0 sec	2 sec
AES (1A–8B) Peak	6 (Major)	0 sec	0 sec
AES (1A–8B) Silence	1 (Minor)	30 sec	0 sec
Dolby Encoder Audio Missing	6 (Major)	0 sec	0 sec
Reference Video Missing	6 (Major)	0 sec	2 sec
Reference Video Not Locked	6 (Major)	0 sec	2 sec
DARS Input Missing	1 (Minor)	0 sec	2 sec
DARS Input not Locked	1 (Minor)	0 sec	2 sec
Ref / Dolby Frame Rate not Equal	6 (Major)	0 sec	2 sec
Reference / Dolby Frame Rate Mismatch	6 (Major)	0 sec	2 sec
Dolby Encoding Stopped	6 (Major)	0 sec	2 sec
Master Mute On	5 (Minor)	0 sec	0 sec
V-Bit Mute On	4 (Minor)	0 sec	0 sec

APM6800-D3+D/APM6801-D3+D Alarms**Table 4-17.** APM6800-D3+D/APM6801-D3+D Alarms

Alarm Name	Alarm Option Default Settings		
	Priority	Trigger	Clear
Input AES (1–8) Missing	1 (Minor)	0 sec	2 sec
AES (1A–8B) Peak	6 (Major)	0 sec	0 sec
AES (1A–8B) Silence	1 (Minor)	30 sec	0 sec
Dolby Encoder Audio Missing	6 (Major)	0 sec	0 sec
Reference Video Missing	6 (Major)	0 sec	2 sec
Reference Video Not Locked	6 (Major)	0 sec	2 sec
DARS Input Missing	1 (Minor)	0 sec	2 sec
DARS Input not Locked	1 (Minor)	0 sec	2 sec
Ref / Dolby Frame Rate not Equal	6 (Major)	0 sec	2 sec
Dolby Encoding Stopped	6 (Major)	0 sec	2 sec
Master Mute On	5 (Minor)	0 sec	0 sec
V-Bit Mute On	4 (Minor)	0 sec	0 sec

APM6801+AAC+D Alarms**Table 4-18.** APM6801+AAC+D Alarms

Alarm Name	Alarm Option Default Settings		
	Priority	Trigger	Clear
Input AES (1–8) Missing	1 (Minor)	0 sec	2 sec
AES (1A–8B) Peak	6 (Major)	0 sec	0 sec
AES (1A–8B) Silence	1 (Minor)	30 sec	0 sec
Reference Video Missing	6 (Major)	0 sec	2 sec
Reference Video Not Locked	6 (Major)	0 sec	2 sec
DARS Input Missing	1 (Minor)	0 sec	2 sec
DARS Input not Locked	1 (Minor)	0 sec	2 sec
AAC Encoding Error	6 (Major)	0 sec	2 sec
AAC Error	6 (Major)	0 sec	2 sec

APM6801+D Neural (UM, DM, MM, LC, LC+6+2+, LC+8+, LC+DM+, UM+LC+, DM+LC+, and MM+LC+) Module Alarms.**Table 4-19.** APM6801+D Neural Alarms

Alarm Name	Alarm Option Default Settings		
	Priority	Trigger	Clear
Input AES (1–8) Missing	1 (Minor)	0 sec	2 sec
AES (1A–8B) Peak	6 (Major)	0 sec	0 sec
AES (1A–8B) Silence	1 (Minor)	30 sec	0 sec
Reference Video Missing	6 (Major)	0 sec	2 sec
Reference Video Not Locked	6 (Major)	0 sec	2 sec
DARS Input Missing	1 (Minor)	0 sec	2 sec
DARS Input not Locked	1 (Minor)	0 sec	2 sec
Master Mute On	5 (Minor)	0 sec	0 sec
V-Bit Mute On	4 (Minor)	0 sec	0 sec

Overview

The following specification tables appear in this chapter:

Inputs:

- “Reference Video” on page 72
- “Balanced DARS” on page 72
- “Unbalanced DARS” on page 73
- “Data I/O” on page 73
- “Unbalanced AES” on page 74
- “Balanced AES (with External Balun)” on page 74

Outputs:

- “Unbalanced AES” on page 75
- “Balanced AES (with External Balun)” on page 75

Performance

- “Power Consumption” on page 76
- “Audio Propagation Delay” on page 76
- “Start-up Time” on page 76
- “Temperature” on page 77

Specifications and designs are subject to change without notice.

Inputs

Reference Video

Table 5-1. Reference Video Input Specifications

Item	Specification
Number of inputs	2 (frame and card)
Connector	BNC (IEC169-8)
Input level	1 Vpk-to-pk \pm 3 dB (nominal)
Impedance	75 Ω
Return Loss (card input)	> 40 dB up to 6 MHz
Standard support	Bi-level, tri-level

Balanced DARS

Table 5-2. Balanced DARS Input (with External Balun) Specifications

Item	Specification
Number of inputs	1
Connector	BNC + Adapter Balun
Sensitivity	< 200 mV
Impedance	110 Ω \pm 20% (0.1 to 6 MHz)
Maximum input signal	10 Vpk-to-pk
Common mode rejection	0 to 7 V (0 to 20 kHz)

Unbalanced DARS

Table 5-3. Unbalanced DARS Input Specifications

Item	Specification
Number of inputs	1
Connector	BNC (IEC169-8)
Standards	AES 3, SMPTE 276M
Type	Unbalanced, AC coupled
Sensitivity	≥ 100 mV
Impedance	75 Ω
Return loss	> 25 dB, 0.1 to 6 MHz

Data I/O

Table 5-4. Data I/O Input Specifications

Item	Specification
Number of inputs	1
Connector	BNC (IEC169-8)
Impedance	75 Ω (jumper selectable)

Unbalanced AES

Table 5-5. Unbalanced AES Input Specifications

Item	Specification
Number of inputs	8
Connector	BNC (IEC169-8)
Standards	AES 3, SMPTE 276M
Type	Unbalanced, AC coupled
Sensitivity	≥ 100 mV
Impedance	75Ω
Return loss	> 25 dB, 0.1 to 6 MHz
Input audio rate	PCM input: 32 to 108 kHz
Bits	16, 20, or 24

Balanced AES (with External Balun)

Table 5-6. Balanced AES Input Specifications

Item	Specification
Number of inputs	8
Connector	BNC + Adapter Balun
Sensitivity	≥ 200 mV
Impedance	$110\Omega \pm 20\%$ (0.1 to 6 MHz)
Maximum input signal	10 Vpk-to-pk
Common mode rejection	0 to 7 V (0 to 20 kHz)

Outputs

Unbalanced AES

Table 5-7. Unbalanced AES Output Specifications

Item	Specification
Number of outputs	8
Connector	BNC (IEC169-8)
Standards	AES 3, SMPTE 276M
Type	Unbalanced, AC Coupled
Signal level	1.0 Vpk-to-pk \pm 10%
Impedance	75 Ω
Return loss	> 25 dB, 0.1 MHz to 6 MHz
Jitter	< \pm 20 ns, peak value
DC offset	0.0 \pm 50 mV
Rise/fall time	30 ns to 44 ns (10% to 90%)

Balanced AES (with External Balun)

Table 5-8. Optional Balanced AES Output Specifications

Item	Specification
Number of outputs	8
Connector	BNC + Adapter Balun
Output level	2.0 to 7.0 Vpk-to-pk
Jitter	\pm 20 ns
Rise/fall time	5 to 30 ns (10% to 90%)
Impedance	110 Ω \pm 20% (0.1 to 6 MHz)
Common mode component	> 30 dB below output signal (0 to 6 MHz)

Performance

Power Consumption

The power consumption is <12 W.

Audio Propagation Delay

Table 5-9. Audio Propagation Delay

Audio Path		Delay
Dolby (Encoding + Decoding)		
PCM audio ⇒ APM6800-D2+D/APM6801-D2+D ⇒ APM6800-D1+D/APM6801-D1+D ⇒ PCM audio	Dolby E In-Out Delay	79.3 ms
PCM audio ⇒ APM6800-D3+D/APM6801-D3+D ⇒ APM6800-D1+D/APM6801-D1+D ⇒ PCM audio	Dolby Digital (AC-3) In-Out Delay	189.0 ms
Non-Dolby (PCM Audio)		
AES audio in ⇒ APM6800-D1+D/APM6801-D1+D/APM6800-D2+D/APM6801-D2+D/APM6800-D3+D/APM6801-D3+D ⇒ AES audio out	AES IN-AES OUT; SRC ON	3.3 ms
	AES IN-AES OUT; SRC OFF	0.02 ms
AES audio in ⇒ APM6800-D1+D/APM6801-D1+D ⇒ Dec_Ch1 Out D ⇒ Dec_Ch2 Out	AES IN-Dec_Ch1 OUT (Non-Dolby Latency “Minimum”)	9.8 ms
	AES IN-Dec_Ch1 OUT (Non-Dolby Latency “Single Frame”)	32.0 ms
AAC	AAC-LC	56.0 ms
	HE-AAC	130.0 ms
APM6801UM+D		66.3 ms
APM6801DM+D		24.0 ms
APM6801MM+D		66.8 ms
APM6801LC+D		69.2 ms
APM6801LC+6+2+D		72.0 ms
APM6801LC+8+D		72.0 ms
APM6801LC+DM+D		70.0 ms
APM6801UM+LC+D		120.0 ms
APM6801DM+LC+D		76.0 ms
APM6801MM+LC+D		120.0 ms

Start-up Time

The Power On/Reset/Hot-swap time is 8 seconds.

Temperature

The range of operating temperatures is 32° to 113°F (0° to 45°C).

Neural Audio Packages

Neural Audio

The APM6801+ offers a wide variety of Neural audio processing options—using DTS Neural® Surround upmix, downmix and Neural Loudness Control™. These options make it possible to offer advanced audio processing for high-definition and surround sound programming using 5.1 and stereo sources.

Table 1. APM6801+ Neural Audio Modules

Part Number	Capability
APM6801UM+D	DTS Neural Surround UpMix DTV 5.1 Production Solution
APM6801DM+D	DTS Neural Surround DownMix DTV 5.1 Transport Solution
APM6801MM+D	DTS Neural Surround 5.1 and rendered stereo content transitioning for DTV 5.1 Production
APM6801LC+D	Neural Loudness Control for 2.0 or 5.1
APM6801LC+6+2+D	Neural Loudness Control for 2.0 and 5.1
APM6801LC+8+D	DTS Neural Loudness Control for 4 x 2.0 Program Audio
APM6801LC+DM+D	DTS Neural Loudness Control for 5.1 Program Audio with DTS Neural Surround™ Downmix output
APM6801UM+LC+D	DTS Neural Surround™ UpMix DTV 5.1 Production Solution with DTS Neural Loudness Control
APM6801DM+LC+D	DTS Neural Surround™ DownMix DTV 5.1 Transport Solution with DTS Neural Loudness Control
APM6801MM+LC+D	DTS Neural Surround™ 5.1 and rendered stereo content transitioning for DTV 5.1 Production with DTS Neural Loudness Control

Firmware upgrades for the APM6800+/APM6801+ can also provide firmware upgrades for the Neural audio processing submodule. In the event firmware for the submodule is upgraded, the module will take approximately 2.5 minutes to fully start up while new firmware is loaded. During this time the card-edge LEDs will flash back and forth. Once this time has elapsed the module will become controllable. Subsequent module start-ups will resume to the normal 8 seconds.



Note

The default settings for each module represent typical setups and configurations for that type of Neural processing device.

Audio Delay with Neural Modules

In some cases, Neural audio processing adds propagation delays to a signal. For a module-by-module list of the delays, see [Table 5-9 on page 76](#).

You can adjust the **Neural Audio Out Delay** parameter for each audio output channel. These parameters are located at **Processing > Neural > Delay**.

DTS Neural® Surround™ UpMix

The DTS Neural Surround UpMix renders any two channel audio source (stereo, matrix encoded stereo, LtRt, or DTS Neural Surround LwRw) as surround sound. The DTS Neural Surround UpMix can simultaneously position individual elements within the surround field, creating high levels of image stability and granularity.

The UpMix technology avoids taking “artistic license” with content by placing audio exactly where it would be heard in a professional LEDE (Live End Dead End) listening environment. For example, mono or pan-pot stereo will image in front of the listener, whereas stereo containing depth information will surround the listener.

You can use the DTS Neural Surround UpMix as a stand-alone unit to monitor stereo production, or you can use it in tandem with the DTS Neural Surround DownMix as a complete 5.1 transport solution.

[Figure A-1](#) below shows an UpMix taking a two-channel audio source (stereo, matrix encoded stereo, LtRt or DTS Neural Surround LwRw) and rendering a 5.1 multi-channel mix.

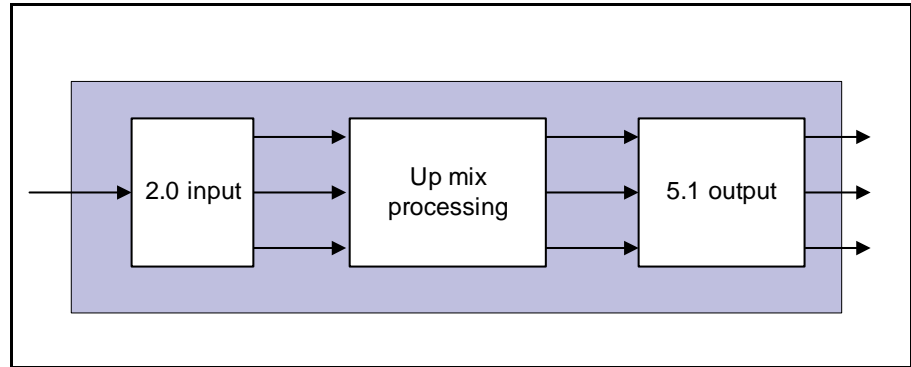


Figure A-1. Neural Audio UpMix Block Diagram

All of the UpMix parameters are located in [Table 4-8 on page 59](#). Neural UpMix parameters appear in APM6801UM+D and APM6801UM+LC+D modules.

APM6801DM+D DTS Neural® Surround™ DownMix

The DTS Neural Surround DownMix enables 5.1 surround sound to be transported through any stereo infrastructure. The downmix process is based upon the principle that both natural stereo and 5.1 content are two-dimensional; both contain width and depth spatial attributes.

The DTS Neural Surround DownMix can represent six channels of discrete audio sources in a stereo downmix by transforming the sources into pure intensity and coherence encoding. By correcting overlaps of the signal sources in intensity, time, coherence, polarity, and phase before the six channels are combined, the DTS Neural Surround DownMix accounts for the problems suffered in traditional matrix encode systems—such as comb filtering, spatial location distortion, etc.

The proprietary Neural Audio “watermark process” faithfully reproduces surround information when it is rendered by the DTS Neural Surround UpMix or any LtRt system. In brief, the DTS Neural Surround DownMix produces a stereo downmix that accurately represents the original content whether monitored in mono, stereo, matrix or DTS Neural 5.1 Surround Sound.

[Figure A-2](#) shows a DownMix taking a multi-channel audio source. The downmix creates two-channel audio source using the Neural Audio approach of embedding a watermark signal within the stereo audio signal patch. The watermark signal contains spatial and steering positioning information. The resulting stereo audio signal is also known as LwRw.

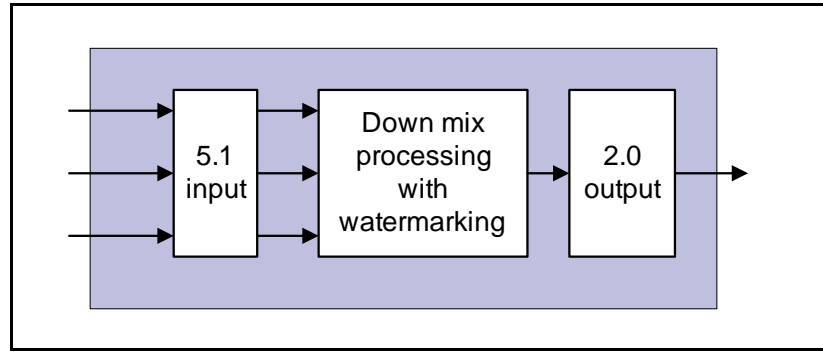


Figure A-2. Neural Audio DownMix Block Diagram

All of the DownMix parameters are located in [Table 4-9 on page 60](#). DownMix parameters appear in the APM6801DM+D, APM6801DM+LC+D, and APM6801LC+DM+D modules.

APM6801MM+D DTS Neural® Surround™ MultiMerge

The DTS Neural Surround MultiMerge enables broadcasters to transition from stereo to 5.1 surround sound, providing viewers with a 24/7 surround sound experience. With MultiMerge inline, 5.1 original content is passed unaffected to the viewer while original stereo content is upmixed to a 5.1 surround sound image. This provides the viewer with a consistent surround experience.

The transition between 5.1 and stereo occurs seamlessly without the need of operator intervention. By offering a 24/7 5.1 signal, AC3 metadata does not transition between 2/0 and 3/2 mode. This prevents audio clicks, pops, and dropouts. The process also avoids taking “artistic license” with content by placing audio exactly where it would be heard in a professional LEDE (Live End Dead End) listening environment. For example, mono or pan-pot stereo will image in front of the listener, whereas stereo containing depth information, or LtRt encoding, will surround the listener.

You can use the MultiMerge in combination with the DTS Neural Surround DownMix device to pass 5.1 through stereo-only facilities and therefore eliminate the need for costly master control upgrades.

[Figure A-3](#) shows how the MultiMerge takes a two-channel audio source (stereo, matrix encoded stereo, LtRt or DTS Neural Surround LwRw) and render a 5.1 multi-channel mix; in combination with taking original multi-channel content and creating a stereo downmixed signal, depending on the input configuration and content source used.

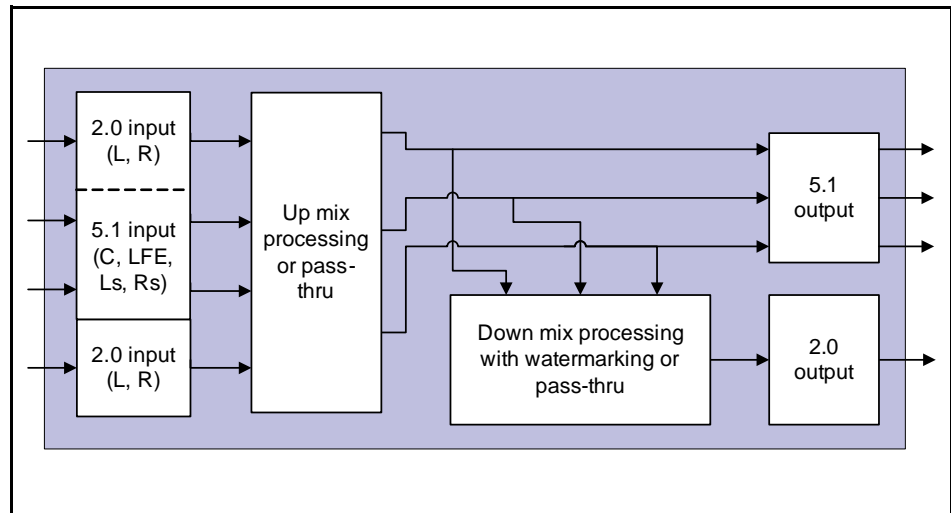


Figure A-3. MultiMerge Block Diagram

Parameters

The **MultiMerge Mode** offers three options:

- **Auto** determines if the content is stereo (2.0) or surround (5.1), and adapts to the correct UpMix/Passthrough mode for consistent 5.1 output).
When in Auto, the **Detect Threshold** parameter controls the noise floor level for the detection. If any content is above this threshold on the surround channel inputs 3-6 (C, LFE, Ls, Rs), the input will be considered surround and MultiMerge will be in passthrough mode.
- **Passthrough** forces MultiMerge to always pass through 5.1 content to the 5.1 outputs untouched, while creating a downmix for the stereo output.
- **UpMix** forces MultiMerge to always upmix stereo content on both of the Left/Right 5.1 inputs and the Aux 2.0 inputs (C, LFE, Ls, and Rs content is still passed through).

Input Select Mode offers eight options:

- **Mix** mixes the auxiliary 2.0 inputs into the multichannel 5.1 inputs.
- **Multi** always uses the multichannel 5.1 inputs.
- **Stereo** always uses the stereo L/R pair from the multichannel inputs.
- **Aux** always uses the auxiliary 2.0 inputs.
- **Multi Detect** uses multichannel 5.1 inputs if they are active. If not, the auxiliary 2.0 inputs are used.
- **Stereo Detect** uses the stereo L/R pair from the multichannel 5.1 inputs if they are active. If not, the auxiliary 2.0 inputs are used.
- **Aux Detect** uses the auxiliary 2.0 inputs if they are active. If not, the multichannel 5.1 inputs are used.

- **Multi Aux Stereo** uses multichannel inputs if they are active, or uses the auxiliary inputs if they are active. If neither of those is active, it uses the stereo L/R pair from the multichannel inputs.

All of the Multimerge parameters are located in [Table 4-10 on page 61](#).

MultiMerge parameters appear in the APM6801MM+D and APM6801MM+LC+D products.

Neural Loudness Control

APM6801+ Neural Loudness Control options manage loudness levels within a specific desired volume range. Advanced psychoacoustic and signal processing techniques detect and regulate the perceived loudness of stereo and 5.1 sources, for example to maintain audio perceived loudness between programming and commercials.

Neural Audio's perceptual loudness measurement tool treats each audio channel (L, R, C, LFE, Ls, and/or Rs) as a separate mono channel. The tool accounts for spectral and density differences and temporal overlaps in modelling how the human ear perceives the loudness of the audio content. DTS Neural loudness measurement accommodates both stereo and multi-channel audio equally well.

After measurement, DTS Neural Loudness Control applies gain or attenuation to achieve the target loudness level (Dial Norm) while preserving the spectral balance of the original signal. It adapts the frequency response of the low and high frequencies to compensate for level differences within the original signal. You can use DTS Neural Loudness Control in the following roles:

- Protection—only affecting content that falls aggressively outside the desired target
- Management—tightly controlling loudness to guarantee intelligibility without the distracting side effects of traditional volume management solutions



Note

Because of the single function nature of APM6801+ modules, default settings provide an optimal configuration for the normal audio situation.

Neural Loudness Control parameters appear in the APM6801LC+D, APM6801LC+6+2+D, APM6801LC+8+D, APM6801LC+DM+D, APM6801UM+LC+D, APM6801DM+LC+D, and APM6801MM+LC+D. The parameters are listed in [Table 4-11 on page 62](#).

Neural Loudness Control Options on APM6801+

Neural Loudness Control is available on its own, and in various combinations with other audio processing options. The following Neural Loudness Control options are available on APM6801+:

- APM6801LC+D Neural Loudness Control for 2.0 or 5.1

This module receives 2.0 or 5.1 input, and outputs audio in the same format. It can do one or the other, not both.

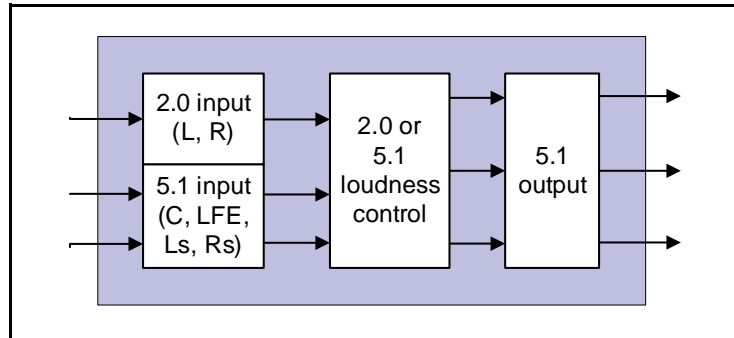


Figure A-4. Loudness Control Block Diagram

- APM6801LC+6+2+D Neural Loudness Control for 2.0 and 5.1

The Neural Loudness Control 6+2 configuration is used when a 5.1 multichannel or surround sound mix is accompanied by an independent stereo mix. It uses the same advanced psychoacoustic and signal processing techniques to accurately detect and regulate the perceived loudness of stereo and 5.1 sources. Common uses are for network programming with SAP, LtRt or Descriptive Video programming.

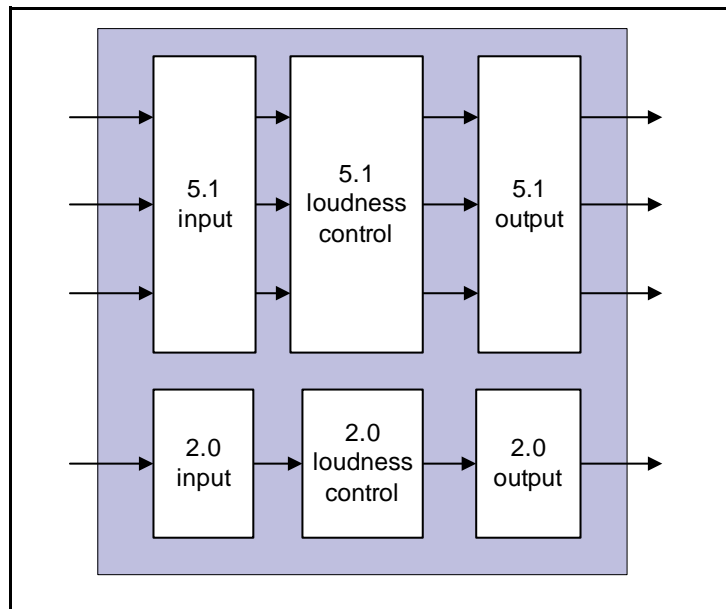


Figure A-5. Loudness Control Block Diagram

- APM6801LC+8+D Neural Loudness Control for 4 x 2.0

This module provides Neural Loudness Control for four separate channels of 2.0 Program Audio, balancing each of the four inputs separately. Neural Loudness Control supports any stereo format (2.0, LtRt, LoRo, LwRw).

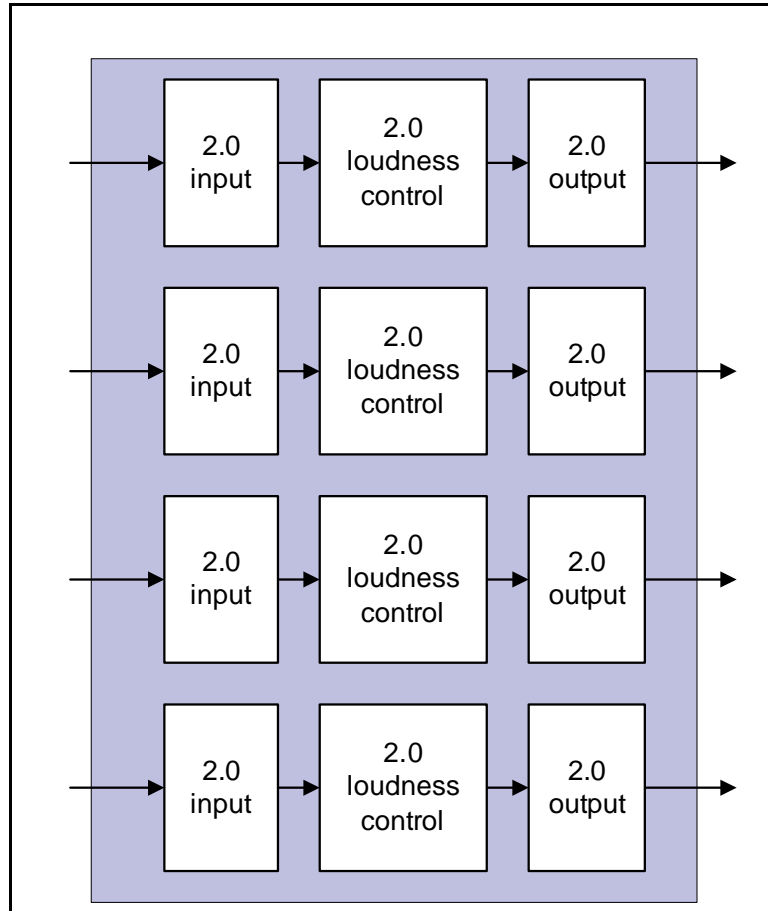


Figure A-6. Loudness Control for Two Channels Block Diagram

- APM6801LC+DM+D Neural Loudness Control for 5.1 with DTS Neural® Surround™ DownMix

This module receives a 5.1 (surround sound) input, to which it applies loudness control. It produces two outputs: the corrected 5.1 output, plus a THX-Surround™ Downmix output.

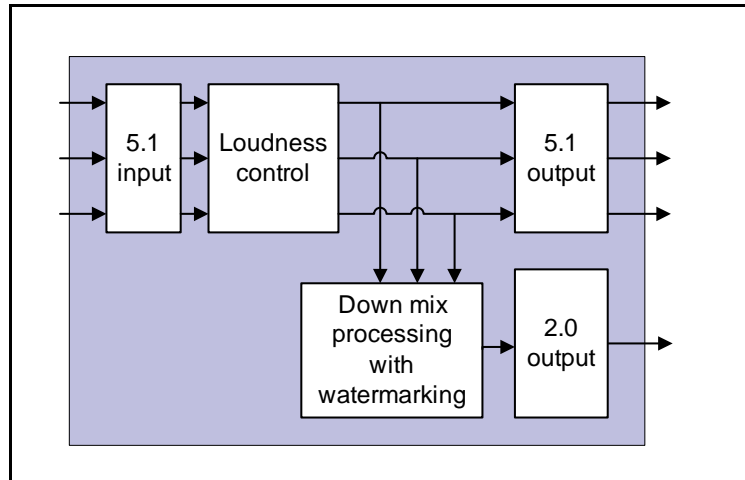


Figure A-7. Loudness Control Plus DownMix Block Diagram

- APM6801UM+LC+D DTS Neural® Surround™ UpMix DTS Neural Loudness Control

This module receives a 2.0 stereo input, and first applies loudness control to it, before applying a Neural THX-Surround™ UpMix and outputting 5.1 audio.

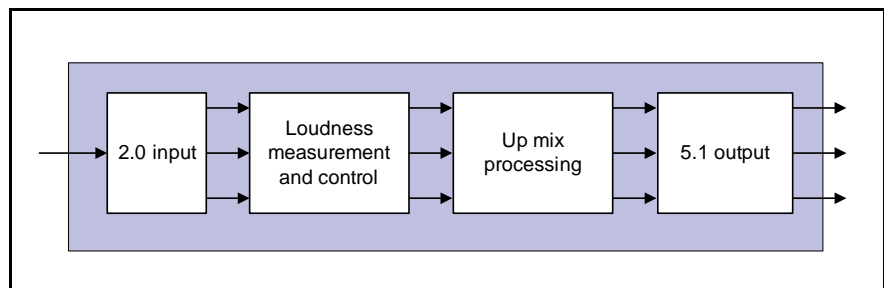


Figure A-8. UpMix Plus Loudness Control Block Diagram

- APM6801DM+LC+D DTS Neural® Surround™ DownMix DTS with Neural Loudness Control

This module receives a 5.1 input, applies DownMix ing to it, and then applies loudness control before finally outputting a stream of 2.0 stereo audio.

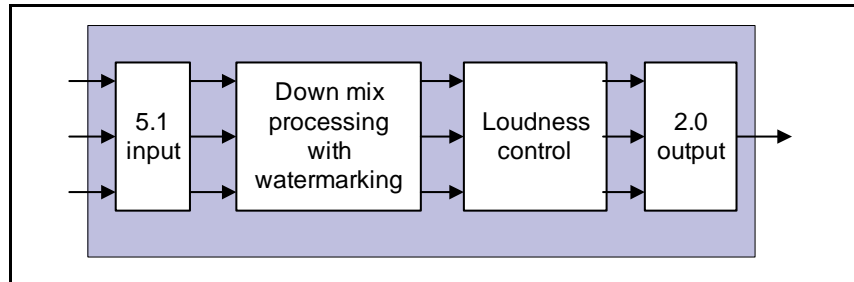


Figure A-9. DownMix Plus Loudness Control Block Diagram

- APM6801MM+LC+D DTS Neural® Surround™ Multimerge with DTS Neural Loudness Control

This module receives either two stereo inputs, or one stereo input and one 5.1 input. First the module applies loudness control to all the audio channels, then passes through or upmixes one stream of audio, and downmixes or passes through the other stream of audio, before outputting one 5.1 output and one 2.0 stereo output.

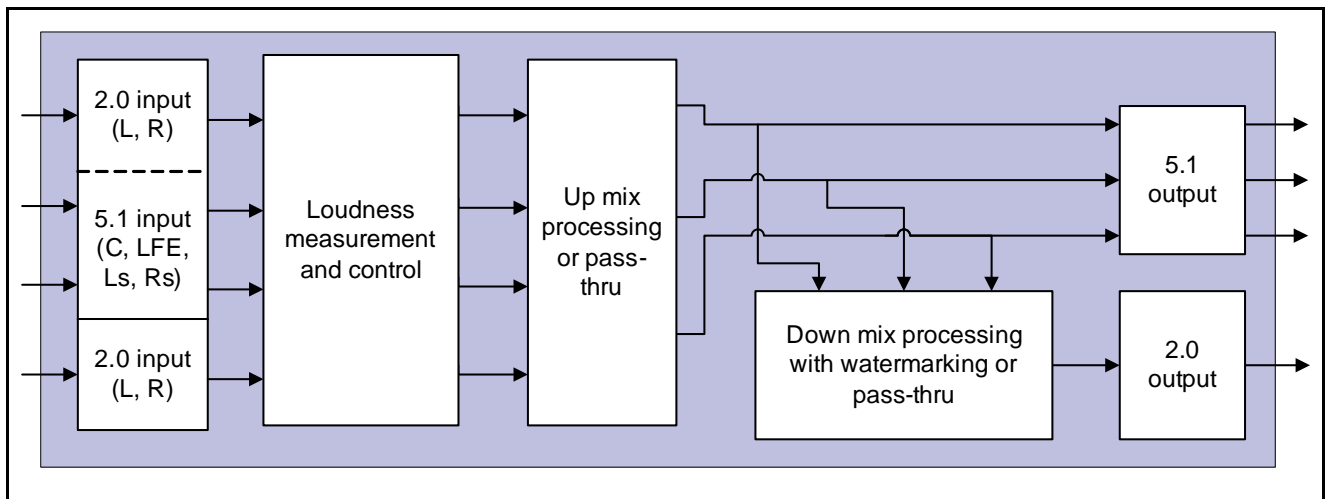


Figure A-10. MultiMerge Plus Loudness Control Block Diagram

Communication and Control Troubleshooting Tips

Software Communication Problems

The frame is powered up, but the module does not communicate with CCS Pilot/Navigator.

Solutions

- Ensure you have specified the proper module slot.
See your *Frame Installation and Operation Manual* for more information about slot identification.
- Verify whether there is an ICE6800+ or 6800+ETH module installed in the frame.
 - FR6802+ frames only use ICE6800+ modules to communicate with CCS software and hardware.
 - FR6802+QXF frames use ICE6800+ or 6800+ETH modules to communicate with CCS software and hardware.
 - FR6822+QXFE frames use 6800+ETH modules to communicate with CCS software and hardware
- Remove any legacy 6800 series product that is in the frame.
CCS software cannot communicate with legacy 6800 series products, even though these modules may operate with card-edge controls. Legacy 6800 products do not have the “+” symbol on their extractor handles.
- Check for bent pins on the back module by following this procedure:
 - a. Unplug the front module.
 - b. Unscrew and remove the back module.
 - c. Inspect the 20- or 30-pin spring connector at the bottom of the back module ([Figure B-1 on page 90](#)), and verify that the connector does not have any slightly bent or pressed pins.
 - d. Carefully reposition any bent pins; If this is not possible, contact Customer Support.

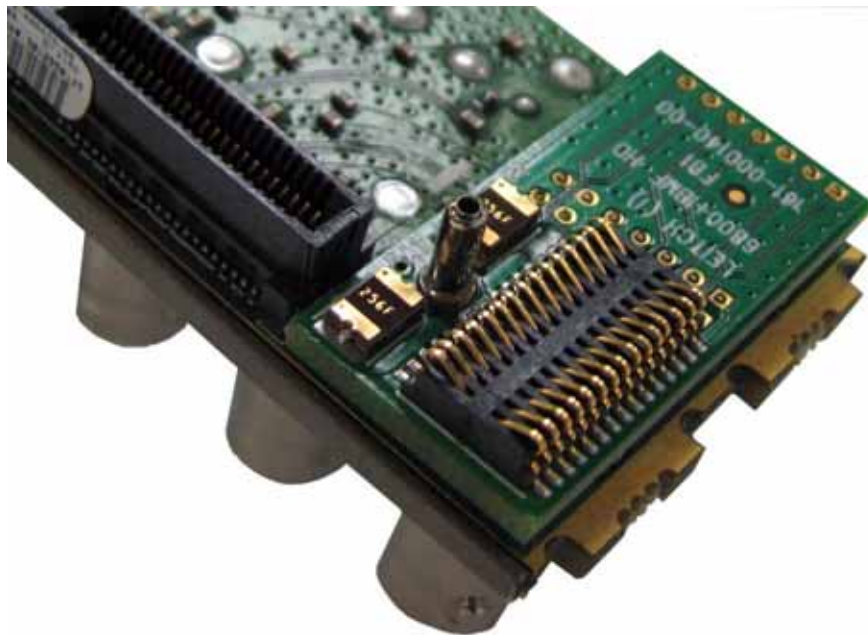


Figure B-1. Typical Back Module Spring Connector

CCS software sees the frame, but does not find all of the modules.

Solutions

- Remove any legacy 6800 series products.
- Plug your modules in before starting the discovery.
- Start your discovery after the frame and all modules have fully powered up.

CCS software shows a module in the Control window, but cannot control it.

Solution

1. Set the module's Local/Remote jumper to **Remote**.
2. Ensure the module name in the Control window matches the module type in the frame.
3. Gently push the module into its slot in the frame to ensure it is seated properly and powered up.
4. Verify that the Control window indicates the device is ready.

Hardware Communication Problems

After a power failure, the frames and PC do not communicate.

Solution

1. Wait four minutes for the frames to recover from the power failure.
2. Close the CCS software, and then restart the PC.
3. Restart the software application.

The module does not seem to work.

Solutions

- Ensure the correct frame is powered up.
- Verify that all appropriate rear connections are secure.
- Gently push the module into its slot in the frame to ensure it is seated properly.
- Ensure the back module does not have bent pins by following this procedure:
 - a. Unplug the front module.
 - b. Unscrew and remove the back module.
 - c. Inspect the spring connector at the bottom of the back module ([Figure B-1](#)), and verify the connector does not have any slightly bent or pressed pins.
 - d. Carefully reposition any bent pins; if this is not possible, contact Customer Support.

Audio Only & Audio/Video Module Combinations

Overview

The APM6800+/APM6801+ audio processing module can be used by itself using the AES inputs and outputs as required for Dolby applications.

When you need embedded audio in video, the SFS, HMX, and HDX products can be used in conjunction with the APM6800+/APM6801+ module and optional cables.



Note

If you combine an APM6800+/APM6801+ module with the SFS6800+ module using the 6800+OPT+BRGAPM cable, the APM6800+/APM6801+ module will indicate the presence of AES inputs 5–8, even though only AES inputs 1–4 are available for processing.

Select your inputs and outputs, audio metadata requirement, and optional cables, and then use your selections to order (or verify) the proper configuration for your application.

Optional Cables

The following illustrations and pinout provide information about the optional cables that are available for the APM6800+/APM6801+ modules. For information about the standard coaxial breakout cable that comes with the APM6800+/APM6801+ modules, see “Breakout Cables” on page 5.

DB9 M to DB9 M Cable (Part No. 6800+OPT+AM)

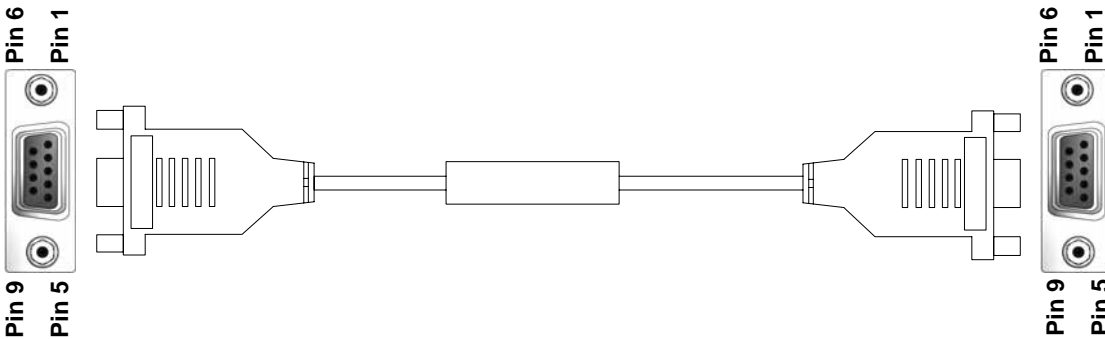


Figure C-1. DB9 M to DB9 M Cable

Table C-1. Pinouts for DB9 M to DB9 M Connectors

Connector 1			Connector 2		
Signal	Description	Pin No.	Pin No.	Signal	Description
FG	Frame Ground	1	1	FG	Frame Ground
FG	Frame Ground	9	9	FG	Frame Ground
FG	Frame Ground	5	5	FG	Frame Ground
RA (Rx-)	Received Data -	8	2	TA (Tx-)	Transmitted Data -
RB (Rx+)	Received Data +	3	7	TB (Tx+)	Transmitted Data +
TA (Tx-)	Transmitted Data -	2	8	RA (Rx-)	Received Data -
TB (Tx+)	Transmitted Data +	7	3	RB (Rx+)	Received Data +
Not Connected		4	4	Not Connected	
		6	6		

SFS to Dolby Bridge Cable (Part No. 6800+OPT+BRGAPM)

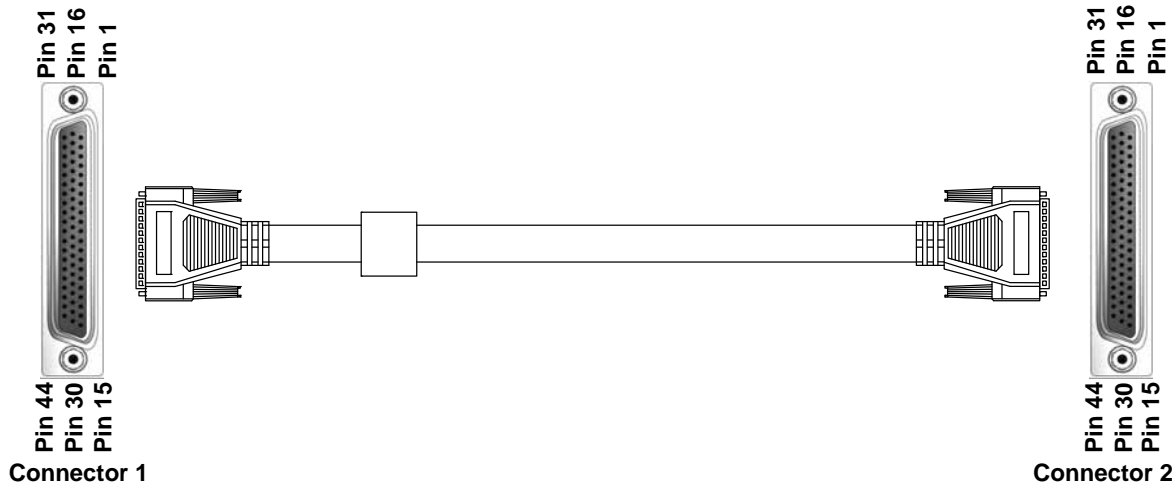


Figure C-2. SFS to Dolby Bridge Cable

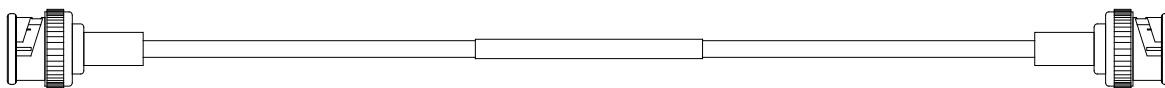
Table C-2. Pinouts for SFS to Dolby Bridge Cable

Description	Pin No. on SFS	Pin No. on SFS	Description
GENLOCK EXT	1	1	GENLOCK EXT
GENLOCK EXT GND	2	2	GENLOCK EXT GND
AES OUT7 GND	3	14	AES IN7 GND
AES IN4	4	26	AES OUT4
AES IN4 GND	5	25	AES OUT4 GND
AES IN3	6	23	AES OUT3
AES IN3 GND	7	22	AES OUT3 GND
DATA IO	8	8	DATA IO
DATA IO GND	9	9	DATA IO GND
AES OUT2	10	21	AES IN2
AES OUT2 GND	11	35	AES IN2 GND
AES OUT1	12	36	AES IN1
AES OUT1 GND	13	37	AES IN1 GND
AES IN7 GND	14	3	AES OUT7 GND
AES IN7	15	18	AES OUT7
DARS IN2	16	16	DARS IN2
DARS IN2 GND	17	17	DARS IN2 GND
AES OUT7	18	15	AES IN7

Table C-2. Pinouts for SFS to Dolby Bridge Cable (*Continued*)

Description	Pin No. on SFS	Pin No. on SFS	Description
DARS IN1	19	19	DARS IN1
DARS IN1 GND	20	20	DARS IN1 GND
AES IN2	21	10	AES OUT2
AES OUT3 GND	22	7	AES IN3 GND
AES OUT3	23	6	AES IN3
AES OUT6 GND	24	42	AES IN6 GND
AES OUT4 GND	25	5	AES IN4 GND
AES OUT4	26	4	AES IN4
AES OUT5 GND	27	30	AES IN5 GND
AES IN8	28	34	AES OUT8
AES IN8 GND	29	33	AES OUT8 GND
AES IN5 GND	30	27	AES OUT5 GND
SERIAL IN-	31	39	SERIAL OUT-
SERIAL IN+	32	40	SERIAL OUT+
AES OUT8 GND	33	29	AES IN8 GND
AES OUT8	34	28	AES IN8
AES IN2 GND	35	11	AES OUT2 GND
AES IN1	36	12	AES OUT1
AES IN1 GND	37	13	AES OUT1 GND
AES OUT6	38	43	AES IN6
SERIAL OUT-	39	31	SERIAL IN-
SERIAL OUT+	40	32	SERIAL IN+
AES OUT5	41	44	AES IN5
AES IN6 GND	42	24	AES OUT6 GND
AES IN6	43	38	AES OUT6
AES IN5	44	41	AES OUT5

BNC Cable (Part No. 6800+OPT+BNCAPM)

**Figure C-3.** BNC Cable

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