Imagine COMMUNICATIONS™

Installation and Operation Manual

# AES6800+

## AES/EBU Audio Distribution Amplifiers

**Edition C**

**175-000186-00**

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# AES6800+

## AES/EBU Audio Distribution Amplifier

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# Installation and Operation Manual

**Edition C**
**November 2011**

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# Preface

## Manual Information

### Purpose

This manual details the features, installation procedures, operational procedures, and specifications of the AES6800+ AES/EBU audio distribution amplifier.

### Audience

This manual is written for engineers, technicians, and operators responsible for the installation, setup, and/or operation of the AES6800+ AES/EBU audio distribution amplifier.

### Revision History

**Table P-1** PManual Revision History

| Edition | Date | Revision History |
|---|---|---|
| A | November 2003 | Initial release |
| B | July 2005 | ■ Added information concerning maximum 6800+ frame power ratings<br>■ Added index |
| C | November 2011 | Minor corrections and updates to contents |

### Writing Conventions

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

**Table P-2** Manual Style and 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. |
| *Italics* | Indicates email 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. |

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**Table P-2** Manual Style and Writing Conventions *(Continued)*

| Term or Convention | Description |
|---|---|
| > | 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

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.

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

   Keep at least one set of original packaging in the event that a product needs to be returned for service. 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.

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# Safety Standards and Compliances

A 6800+ series safety manual is shipped with every *6800+ Frame Installation and Operation Manual* and can be downloaded from our website. Alternatively, contact your Customer Service representative for a copy of this safety manual.

## 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 takes effect on July 1, 2006, and it refers to the following hazardous substances:

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent Chromium (Cr-V1)
- Polybrominated Biphenyls (PBB)
- Polybrominated Diphenyl Ethers (PBDE)

In accordance with this EU Directive, all products sold in the European Union will be fully RoHS-compliant and "lead-free." (See our website for more information on dates and deadlines for compliance.) 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. Effective August 13, 2005, producers or users will be 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 properly recycled. (See our website for more information on dates and deadlines for compliance.) Contact your local Sales representative for information on returning these products for recycling. Eequipment that complies with the EU directive will be marked with a WEEE-compliant symbol, as shown in **Figure P-2**.

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**Figure P-2** WEEE Compliance Symbol

## Safety Terms and Symbols

This product manual uses the following safety terms and symbols to identify certain conditions or practices. See the *6800+ Safety Instructions and Standards Manual* for more information.

**Table P-3** Safety Terms and Symbols

| | |
|---|---|
| | WARNING<br><br>Identifies conditions or practices that can result in personal injury or loss of life—high voltage is present. Uninsulated dangerous voltage within the product's enclosure may be sufficient to constitute a risk of electric shock to persons. |
| | CAUTION<br><br>Identifies conditions or practices that can result in damage to the equipment or other property. Important operating and maintenance (servicing) instructions are included in the literature accompanying the product. |

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# 1 Introduction

## Product Description

AES6800+ is a digital audio distribution amplifier module set in the new 6800+ family. The AES6800+ features cable auto-equalization, data reclocking, and incoming data error detection and reporting. The error detection and reporting features use front-mounted LEDs and an external alarm reporting. Housed in an FR-6802+ series frame, this distribution amplifier meets the AES interface standards according to SMPTE 276M, AES3 1992 (r 1997), and AES3 id-2001.

These DAs feature high audio performance, low cost, remote monitoring, and diagnostic capability in our control system.

You can set up and monitor the AES6800+ locally via DIP switches. You can monitor error signals and card status remotely on a PC. For remote monitoring, you can use either a serial RS-232 or optional ICE6800+ Ethernet connection.

### Typical Broadcast and Production Applications

The AES6800+ distribution amplifier can be used in broadcast, cable, production, educational, and auditorium applications where a low cost method of distributing AES/EBU digital audio signals is required.

### Main Features

- Available in balanced (AES6800+B) and coaxial (AES6800+C) I/O formats
- Distribution of one signal input into four or nine isolated outputs
- Input signal lock detect
- Automatic or manual EQ
- Sampling frequency from 30 kHz to 192 kHz
- Bypass mode for non-AES signals of < 30 MHz @ 50% duty cycle
- Automatic reporting of data or signal quality errors, such as
  - CRC errors
  - Validity
  - Confidence
  - Biphase encoding errors
  - Parity errors

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# Module Descriptions

## Front Module AES6800+B

The AES6800+B is a balanced 4- or 9-output AES/EBU digital audio distribution amplifier. It uses serial transmission format over twisted pair for two-channel linearly represented digital audio data per AES3-1992.

**Figure 1-1** is a generic top-front view of a typical AES6800+B front module, and shows the general location of LEDs and jumpers.

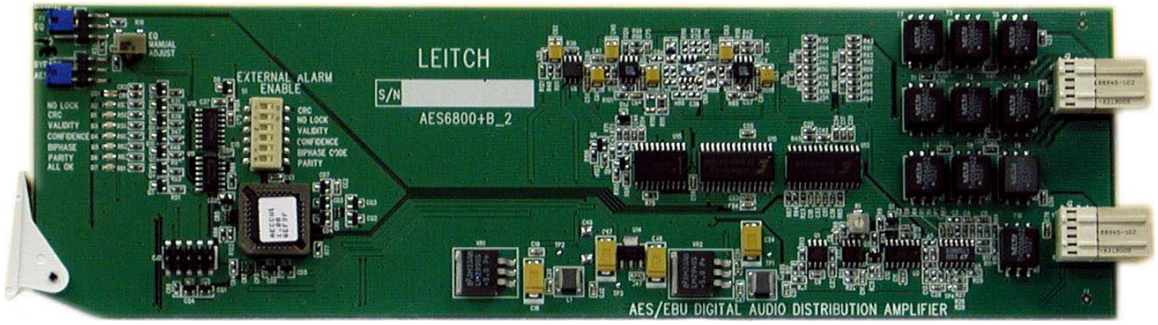


**Figure 1-1** Typical AES6800+B Front Module

## AES6800+C

The AES6800+C is a coaxial 4- or 9-output AES/EBU digital audio distribution amplifier. It uses serial transmission format over 75Ω coaxial cable per SMPTE 276M.

**Figure 1-2** is a generic top-front view of a typical AES6800+C front module, and shows the general location of LEDs and jumpers.

**Figure 1-2** Typical AES6800+C Front Module

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## LEDs, Switches, and Jumpers

**Table 1-1** briefly describes generic 6800+ LEDs, switches, and jumpers. See **Chapter 2, *Installation and Configuration*** for more information on specific AES6800+ module controls, LEDs, and jumpers.

**Table 1-1** Generic 6800+ Module Features

| Feature | Description |
|---|---|
| Module status LEDs | Various color and lighting combinations of these LEDs indicate the module state. See **Table 1-2** on page 3 and ***LEDs and Alarms*** on page 16 or more information. |
| Control LEDs | Various lighting combinations of these control LEDs (sometimes referred to as "Bank Select LEDs") indicate the currently selected bank. (This item not available on the AES6800+) |
| Monitoring LEDs | Each 6800+ module has a number of LEDs assigned to indicate varying states/functions. See ***LEDs and Alarms*** on page 16 for a description of these LEDs. |
| Local/remote control jumper | ■ **Local**: Locks out external control panels and allows card-edge control only; limits the functionality of remote software applications to monitoring<br>■ **Remote**: Allows remote or local (card-edge) configuration, operation, and monitoring of the AES6800+ |

Each 6800+ module has a number of LEDs assigned to indicated varying states/functions. These functions are listed in **Table 1-2**.

**Table 1-2** AES6800+ Module-Specific Status LEDs

| Condition | Color | Function |
|---|---|---|
| All OK<br>No Errors | Green | No error, everything working well |
| No lock | Red | Signal not present or cannot be locked |
| Biphase coding error | Amber | Biphase coding of incoming data incorrect |
| Parity error | Amber | AES stream's parity not set as specified |
| CRC error | Amber | CRC value calculated for incoming data does not match the CRC byte of channel status word |
| Confidence flag error | Amber | Received data eye opening less than half a bit period, indicating a possible lack of signal strength or high jitter; also may mean that insufficient EQ applied |
| Validity error | Amber | AES stream's validity bit is high (incoming data not suitable for conversion to an analog audio signal) |
| Alarm | Amber | External alarm contact closure asserted; card reporting an alarm |

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**Table 1-2** AES6800+ Module-Specific Status LEDs

| Condition | Color | Function |
|---|---|---|
| Frame status* | Red | Frame alarm |
| | Green | All OK, no frame alarm |

* If the frame status LED is not lit, the module may not be operational.

## Back Module FR6802+ Frame Back Module

**Figure 1-3** shows the single-width back connector and **Figure 1-4** shows the double-slot back connector used by the AES6800+ when installed in an FR6802+ or FR6802+DM frame.

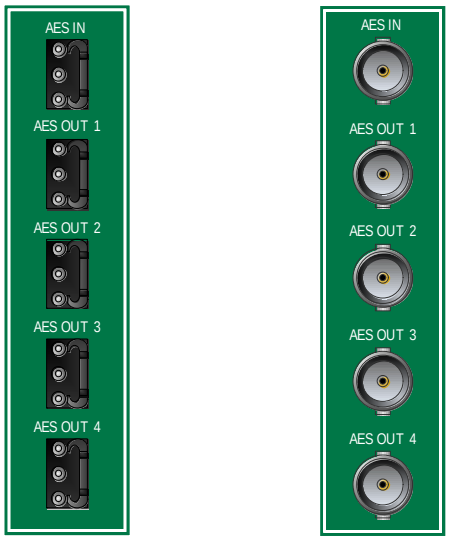


**Figure 1-3** Single-Width Back Connectors for FR6802+ Frame

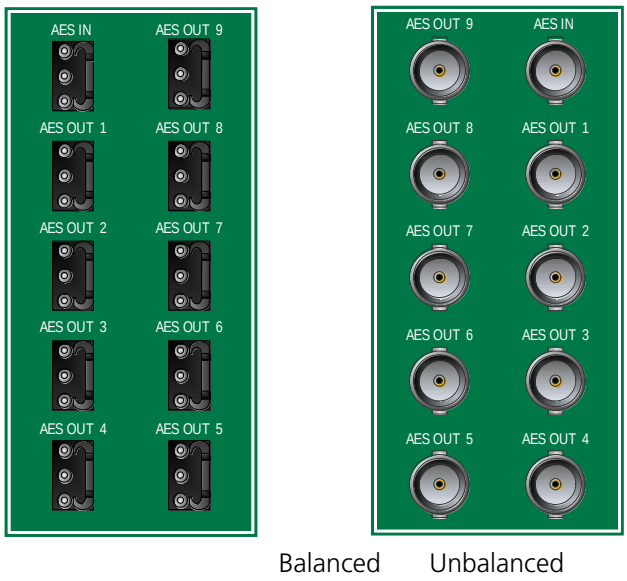


**Figure 1-4** Double-Slot Back Connectors for FR6802+ and FR6802+DM Frames

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## 6800/7000 Series Frame Back Module (Overlay) (AES6800+C Only)

***Note:*** *Remote monitoring for the AES6800+C module is not available if it is installed in a 6800/7000 series frame.*

**Figure 1-5** shows the double-slot back connector overlay used by the AES6800+C when installed in a 6800/7000 series frame. The AES6800+B cannot be installed in a 6800/7000 series frame.

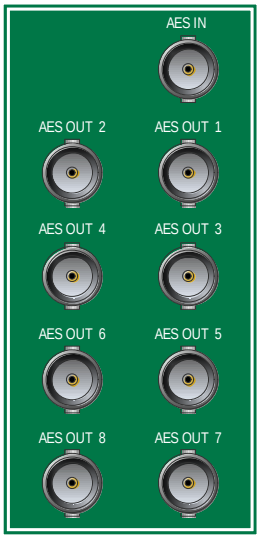


**Figure 1-5** Back Connector for 6800/7000 Series Frame

# Signal Flow

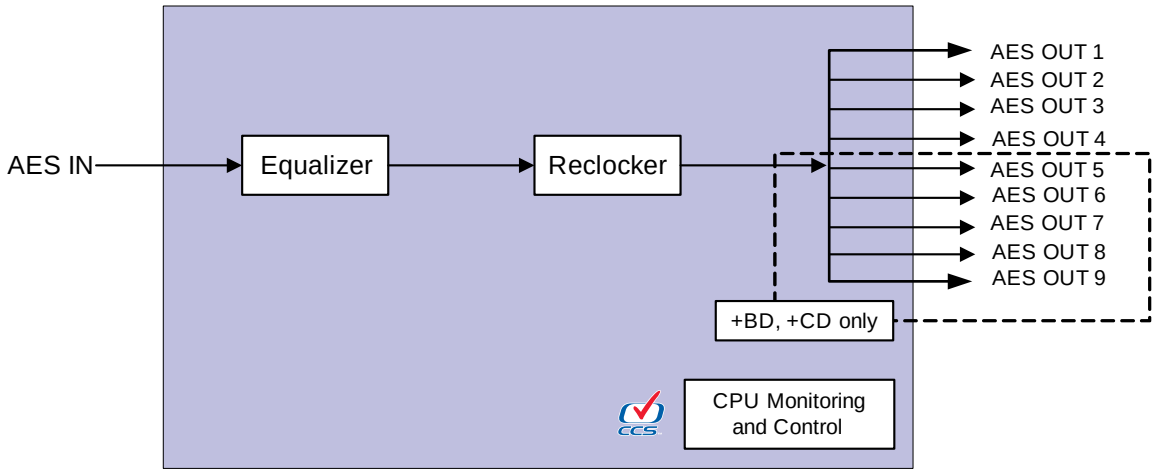


**Figure 1-6** AES6800+B and AES6800+C Signal Flow Diagram

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# 2 Installation and Configuration

## Overview

**CAUTION: Before installing this product, read the *6800+ Series Safety Instructions and Standards* manual shipped with every *FR6802+ Frame Installation and Operation Manual*, or downloadable from our website. This safety manual contains important information about the safe installation and operation of 6800+ series products.**

See the *FR6802+ Frame Installation and Operation Manual* for information about installing and operating an FR6802+ frame and its components.

The AES6800+C can be installed in a 6800/7000 series frame. When installed in a 6800/7000 series frame, the AES6800+C will not report to the frame alarm.

The AES6800+B cannot be installed in a 6800/7000 series frame.

## Unpacking the Module

### Preparing the Product for Installation

Before you install the AES6800+, perform the following:

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

- 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*** for more information.
- 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 viii for information about returning a product for servicing.

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## Checking the Packing List

**Table 2-1** AES6800+ Packing List

| Ordered Product | Content Description |
|---|---|
| AES6800+ | ■ One AES6800+ front module<br>■ One *AES6800+ Installation and Operation Manual* |
| AES6800+S | ■ One AES6800+ front module<br>■ One standard single-slot back connector<br>■ One *AES6800+ Installation and Operation Manual* |
| AES6800+D | ■ One AES6800+ front module<br>■ One standard double-slot back connector<br>■ One *AES6800+ Installation and Operation Manual* |
| AES6800+SR | ■ One standard single-slot back connector |
| AES6800+DR | ■ One standard double-slot back connector |

# Setting Jumpers

***Note:*** *We recommend that you use the available 6800+ software control options (serial/local or Ethernet/remote) to aid in viewing, setting, and confirming parameter values.*

The AES6800+ module has two standard jumpers, which are located on the front card edge. The jumpers allow you to switch between EQ automatic and manual modes, and between AES and bypass modes.

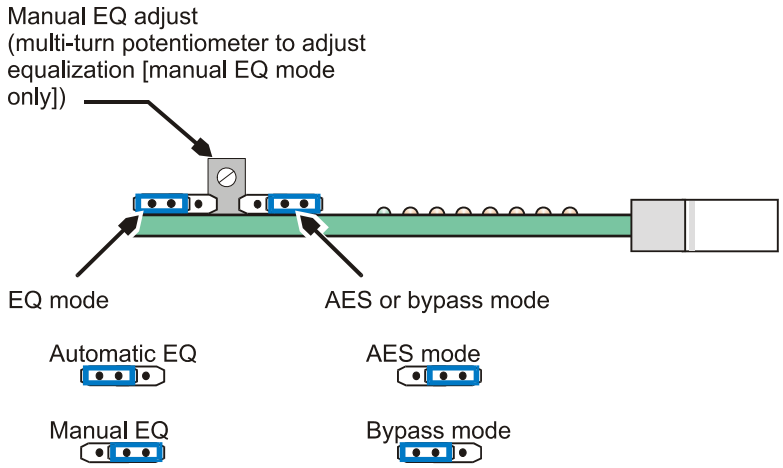


**Figure 2-1** Settings for Automatic / Manual EQ Mode, and AES / Bypass Mode

## EQ Mode

This distribution amplifier provides two options for EQ adjustment: manual and automatic. The mode is jumper-selected. See **Figure 2-1**.

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## Manual EQ

In manual adjust mode a card-edge mounted, multi-turn potentiometer manual EQ adjust is used for adjusting equalization. The Lock and Confidence flag warnings on the card-edge mounted LED indicator can be used to determine the amount of EQ required without external test equipment. If the confidence flag error light is on, more EQ is needed. To increase the amount of EQ, use a screwdriver to turn the manual EQ adjustment potentiometer counter-clockwise until the Confidence LED indicator turns off and the Lock LED indicator turns green.

## Automatic EQ

***Note:*** *The factory default configurations for J1 is in the "AUTO" position.*

In automatic adjust mode, the AES6800+ automatically sets the amount of cable EQ needed to improve signal quality in case of signal degradation over extended cable lengths.

The EQ is designed for use with up to 2,000 ft (609 m) of Belden 8281 coaxial cable or equivalent, or up to 1,000 ft (304 m) of Belden 8451 twisted pair cable or equivalent.

**AES or Bypass Mode**

## AES Mode

***Note:*** *The factory default configuration is for AES mode.*

AES mode is used to allow the distribution amplifier to automatically receive and decode audio data according to AES3 interface standards. It also allows the DA to decode the AES data stream for any error information.

## Bypass Mode

Bypass mode is used to allow the distribution amplifier to pass non-AES or non-biphase encoded signals of frequency less than 30 MHz at 50% duty cycle.

# Setting the Jumper for the AES Digital Audio Signal

Follow this procedure to set the jumper for the proper AES digital audio signal:

1 Locate the jumper set on the module (near the top front of the module).
**Figure 2-2** shows the standard location of the jumper set.

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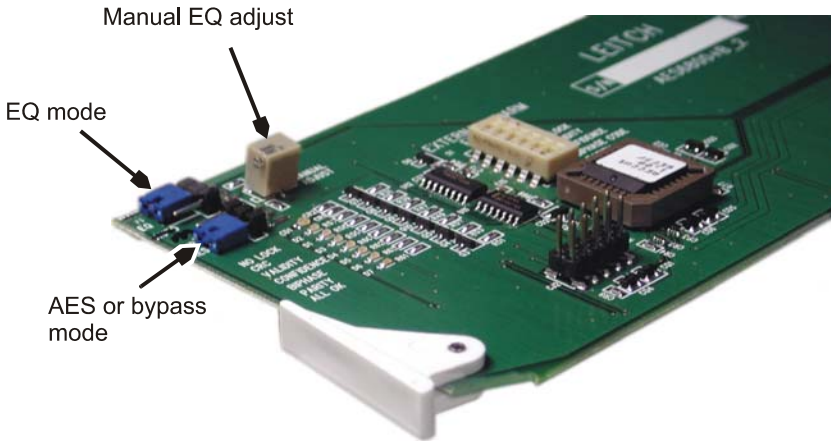


**Figure 2-2** Location of the Jumper Set

**2** Place a jumper on the pin that corresponds to the mode that you want (see Figure 2-1 on page 8).

## Setting DIP Switches

***Note:*** *DIP switches are set at the Manufacturing facility to the ALL ON position.*

A six-pin DIP switch provides for external frame alarm configuration. The DIP switches allow you to select which errors contained within the biphase encoded data stream (received by the receiver) can trigger a frame alarm. When a DIP switch is in the ON position, any error received from the AES biphase encoded signal will trigger the frame alarm, light the appropriate LED, and light the red frame status LED.

DIP switches must be set to the ON position for the alarms to show up in Navigator.

The DIP switches allow selectable error reporting of these types of errors:

- CRC errors
- Loss of lock
- Validity errors
- Confidence errors
- Biphase coding errors
- Parity errors

To prevent any of the listed errors from triggering the frame alarm, you must set the appropriately labeled DIP switch to the OFF position.

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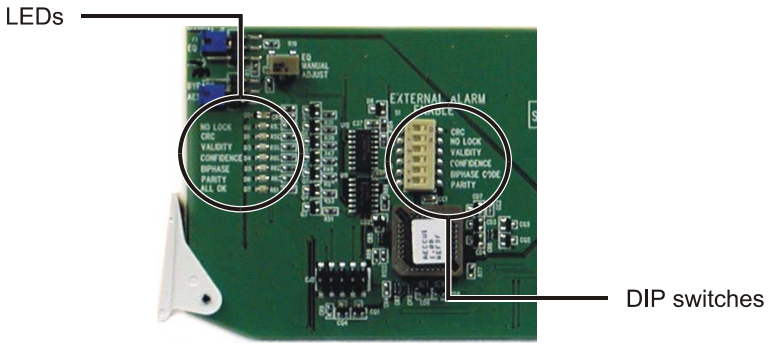


**Figure 2-3** Location of DIP Switches

## Maximum 6800+ Frame Power Ratings

Table 2-2 describes the maximum allowable power ratings for 6800+ frames.Note the given maximums before installing any 6800+ modules in your frame.

AES6800+B and AES6800+C modules can be installed in either FR6802+ frames; AES6800+C modules only can be installed in 6000/7000 series frames.

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

| **6800+ Frame Type** | **Max. Frame Power Dissipation** | **Number of Usable Slots** | **Max. Power Dissipation Per Slot** |
|---|---|---|---|
| FR6802+DM frame (with AC power supply, without fans) | 50 W | 10 | 5 W |
| FR6802+DMF frame (with AC power supply and fans) | 120 W | 10 | 12 W |
| FR6802+X frame (with AC power supply, without fans) | 50 W | 20 | 2.5 W |
| FR6802+XF frame (with AC power supply and fans) | 120 W | 20 | 6 W |
| FR6802+DM48frame (With DC power supply, without fans) | 50 W | 10 | 5.0 W |
| FR6802+DMF48 frame (With DC power supply and fans) | 105 W | 10 | 10.5 W |
| FR6802+X48 frame (With DC power supply, without fans) | 50 W | 20 | 2.5 W |
| FR6802+XF48 frame (With DC power supply and fans) | 105 W | 20 | 5.25 W |
| FR6802+QXF frame (with AC or DC power supply) | 120W | 20 | 6 W |
| FR6822+ frame (with AC or DC power supply) | 120W | 20 | 6 W |

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# Installing 6800+ Modules

## Required Frames and Back Connector Types

The AES6800+ modules have double-width back connectors that can be installed in an FR6802+X(F) or a 6000/7000 series frame. See the *FR6802+ Frame Installation and Operation Manual* for details on installing back connectors in an FR6802+ frame.

See the *6800 Series Frames and Power Supply Installation and Operation Manual* for details on installing back connectors in a 6000/7000 series frame.

## Installing AES6800+ Modules

These modules require no specialized installation procedures.

- See the *FR6802+ Frame Installation and Operation Manual* for information about installing and operating an FR6802+ frame and its components.
- See the *6800 Series Frames and Power Supply Installation and Operation Manual* for information about installing and operating a 6800/7000 series frame.

## Removing AES6800+ Modules

These modules require no specialized removal procedures.

- See the *FR6802+ Frame Installation and Operation Manual* for information about removing components in an FR6802+ frame.
- See the *6800 Series Frames and Power Supply Installation and Operation Manual* for information about removing components in a 6800/7000 series frame.

## Making Connections

Once you have installed your AES6800+ modules, you can connect them to the appropriate input and outputs.

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# 3 Operation

## Overview

Controls for AES6800+ include jumpers (see ***Setting Jumpers*** on page 8) and DIP switches (see ***Setting DIP Switches*** on page 10), in addition to parameters that can be monitored in CCS Navigator or using a NUCLEUS control panel.

This chapter describes how to operate the AES6800+ using local controls only. See the CCS™ Navigator™ or NUCLEUS user manuals for information on how to operate this product remotely.

## Introducing Parameter Types

Most AES6800+ parameters are adjustable, and can be set using either card-edge controls (see ***Setting Jumpers*** on page 8) or a software application. However, there are some parameters that are considered "read-only" and cannot be changed. Indicated by the abbreviation "*[RO]*," these parameters provide status and feedback information only.

### Adjustable Parameters

Two types of adjustable parameters can be changed using the card-edge controls:

- *Numerical* parameters—which require you to select a value within a numerical range
- *Selectable* parameters—which require you to select a specific option

Both numerical and selectable parameter changes are immediate.

Use the available 6800+ software controls (serial/local or Ethernet/remote network) to view and monitor parameter selections.

### Read-Only Parameters

Many of the read-only parameters are also represented by LEDs on the front of the module's card edge. See **Figure 3-1** for the location of these LEDs.

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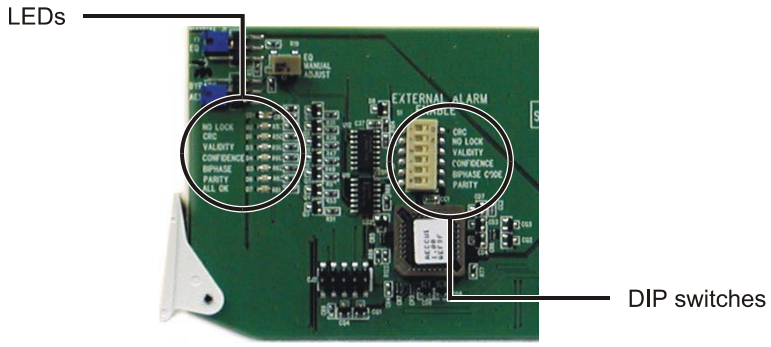


**Figure 3-1** Location of LEDs

## Operating Notes

When setting the control parameters on the AES6800+, observe the following:

- 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.

When setting the control parameters on the AES6800+, observe the following:

- When the module is set to remote control, the reclocking mode is controlled by the CCS control software application. When the module powers up with remote selected, the reclocking mode is set to the last known value.
- When the module is set to local control, the reclocking mode is controlled by adjusting the card-edge jumper to the appropriate setting. Reclocking mode selections are reflected in the CCS control software application. Any remote attempts to adjust the reclocking mode will have no effect.
- If a card-edge jumper is not installed the reclocking mode is set to Auto.

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# Setting Locally Accessible Parameters

**Table 3-1** describes AES6800+ parameters that are accessible locally via an on-board jumper. See ***Setting Jumpers*** on page 8 for more information about setting these parameters via jumper.

**Table 3-1** Locally Accessible Parameters

| Parameter Name | Range | Description |
|---|---|---|
| Module status | ■ Red | Alarm condition exists |
| | ■ Green | Operating properly |
| | ■ Off | Not operational |
| | ■ Red, blinking | Not operational; hardware fault |
| | ■ Alternating | Module configuration ongoing |
| All OK | ■ Green | Signal present, no errors |
| CRC | ■ Yellow | CRC value of the data does not match the CRC byte of the channel status |
| | ■ Off | CRC value correct |
| Validity | ■ Yellow | Incoming value not suitable for conversion to analog audio signal |
| | ■ Off | Data valid |
| Biphase coding | ■ Yellow | Biphase coding of incoming data invalid |
| | ■ Off | Biphase coding correct |
| Parity | ■ Yellow | AES stream parity bit is not set as specified |
| | ■ Off | AES stream parity bit correct |
| Confidence | ■ Yellow | Received data pattern is less than one-half a bit period, indicating a possible leak in signal strength, high jitter, or insufficient EQ |
| | ■ Off | Received data pattern correct |
| No Lock | ■ Red | Signal is not present |

# Changing Parameter Settings

You can trigger the master frame alarm from the AES error detection and reporting feature designed into the AES6800+ distribution amplifier. The error detection feature will report problems contained within the AES data stream, such as CRC, validity, confidence, biphase, parity, and lock.

To “force” the frame alarm on an AES error detection, you must set the corresponding DIP switch (S1) to the “ON” position. DIP switches are marked accordingly.

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### Recalling Default Parameter Settings

You cannot recall default parameter settings for the AES6800+.

### Reading the Software Version

The current software version of your AES6800+ module can only be viewed using Navigator (via Ethernet control). See your *CCS Navigator User Manual* or Online Help for information on viewing software versions.

### Reading the Hardware Version

The current hardware revision of your AES6800+ module can only be viewed using Navigator (via Ethernet control). See your *CCS Navigator User Manual* or Online Help for information on viewing hardware identifiers.

## LEDs and Alarms

### Module Status LED

The AES6800+ module has a module status LED that reports the state of the module. See **Figure 1-1** on page 2 or **Figure 1-2** on page 2 for the location of this LED, and **Table 3-2** for a definition of LED colors.

**Table 3-2** 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 operates properly |
| Red | There is an alarm condition |

### Alarms

Alarms are usually logged and monitored within CCS Navigator. See the Navigator user manual or online help for more information.

***Note:*** *For alarms to appear in CCS Navigator, the DIP switches on the module must be set to the ON position. See* ***Setting DIP Switches*** *on page 10.*

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## Other LED Descriptions

See **Figure 1-1** on page 2 or **Figure 1-2** on page 2 for the location of this LED , and **Table 3-3** for a definition of LED colors and meanings.

**Table 3-3** LED Descriptions

| LED Name | Color | Description (When Lit) |
|---|---|---|
| No Lock | Red | Loss of signal lock |
| CRC | Amber | CRC error |
| Validity | Amber | Validity error |
| Confidence | Amber | Confidence error |
| Biphase | Amber | Biphase error |
| Parity | Amber | Parity error |
| All OK | Green | AES data stream good |

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# 4 Specifications

Specifications and designs are subject to change without notice.

## Inputs

**Table 4-1** AES6800+B[1] Input Specifications

| Item | Specification |
|---|---|
| Number of inputs | 1 |
| Input connector | WECO |
| Signal type | Balanced, transformer coupled |
| AES frame rates | 30 kHz – 192 kHz |
| Impedance | 110Ω |
| Signal amplitude | 0.2 Vp-p to 7 Vp-p |
| Cable EQ | 0 – 984 ft (0 – 300 m) twisted pair Belden 8451 or equivalent |

**Table 4-2** AES6800+C[1] Input Specifications

| Item | Specification |
|---|---|
| Number of inputs | 1 |
| Input connector | BNC |
| Signal type | AC coupled |
| AES frame rates | 30 kHz – 192 kHz |
| Impedance | 75Ω |
| Signal amplitude | 0.1 Vp-p to 2 Vp-p |
| Return loss | > 30 dB |
| Cable EQ | 0 – 1969 ft (0 – 600 m) coaxial Belden 8281 or equivalent |

[1] AES6800+B conforms to AES3-1992. AES6800+C conforms to SMPTE 276M.

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# Outputs

**Table 4-3** AES6800+B[1] Output Specifications

| Item | Specification |
|---|---|
| Number of outputs | 4 or 9 |
| Output connector | WECO |
| Type | Balanced, transformer coupled |
| Impedance | 110Ω |
| Signal amplitude | 5 Vp-p ± 1 V into 110Ω load |

**Table 4-4** AES6800+C[1] Output Specifications

| Item | Specification |
|---|---|
| Number of outputs | 4 or 9 |
| Output connector | BNC |
| Signal type | Uncoupled |
| Impedance | 75Ω |
| Return loss | > 30 dB |
| Signal amplitude | 1.0 Vp-p ± 10% into 75Ω load |

# Performance

**Table 4-5** AES6800+B[1] Performance Specifications

| Item | Specification |
|---|---|
| Jitter | < 5 ns |
| DC offset | 0.0 V ± 50 V |
| Rise/fall time | 5 ns to 30 ns |

**Table 4-6** AES6800+C[1] Performance Specifications

| Item | Specification |
|---|---|
| Jitter | < 5 ns |
| DC offset | 0.0 V ± 0.05 V |
| Rise/fall time | 30 ns to 44 ns |

[1] AES6800+B conforms to AES3-1992. AES6800+C conforms to SMPTE 276M.
[2] AES6800+B conforms to AES3-1992. AES6800+C conforms to SMPTE 276M.

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## Power Consumption

**Table 4-7** Power Consumption Specifications

| Item | Specification |
|---|---|
| AES6800+B | < 5 W |
| AES6800+C | < 5 W |

## Propagation Delay

**Table 4-8** Propagation Delay Specifications

| Item | Specification |
|---|---|
| AES6800+B | < 600 ns @ 48 kHz |
| AES6800+C | < 600 ns @ 48 kHz |

## Temperature

**Table 4-9** Temperature Specification

| Item | Specification |
|---|---|
| Performance | 41° – 104°F (5° – 40°C) |
| Operating | 32° – 122°F (0° – 50°C) |

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# A Troubleshooting

## Software Communication Problems

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

### Solutions

- Ensure you have specified the proper module slot.

  See the installation and operation manual for your frame for more information about slot identification.
- Verify whether there is an ICE6800+ or 6800+ETH module installed in the frame.
- 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 in an FR6802+ frame. Legacy 6800 products do not have the "+" symbol on their extractor handles.
- Check for bent pins on the back module by following this procedure:
  - **i.** Unplug the front module.
  - **ii.** Unscrew and remove the back module.
  - **iii.** Inspect the 20- or 30-pin spring connector at the bottom of the back module (**Figure A-1** on page 24), and verify that the connector does not have any slightly bent or pressed pins.
  - **iv.** Carefully reposition any bent pins; If this is not possible, contact Customer Support.

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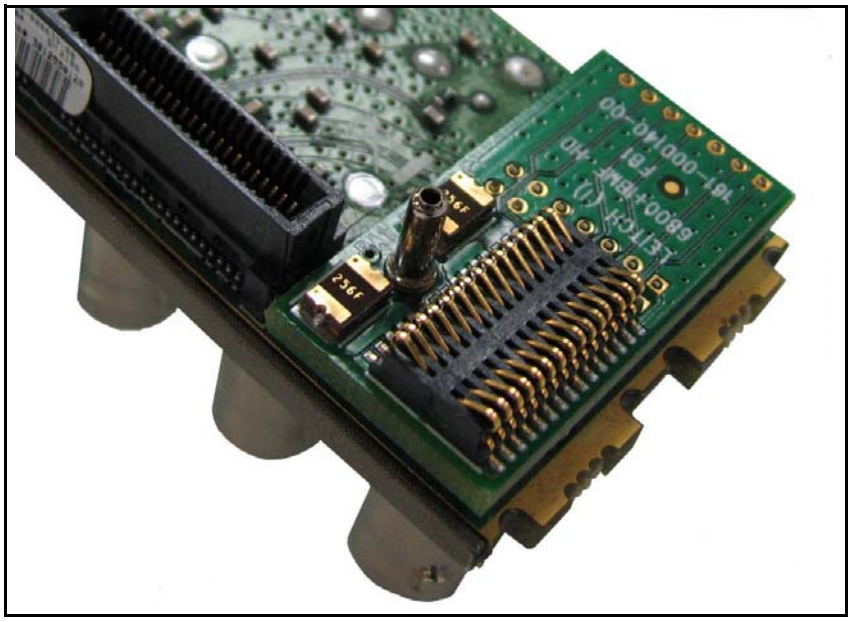

**Figure A-1** Typical Back Module Spring Connector

### 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.

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### 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:
  - **i.** Unplug the front module.
  - **ii.** Unscrew and remove the back module.
  - **iii.** Inspect the spring connector at the bottom of the back module (**Figure A-1**), and verify the connector does not have any slightly bent or pressed pins.
  - **iv.** Carefully reposition any bent pins; if this is not possible, contact Customer Service.

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