DOLBY

Dolby® CP750 Digital Cinema Processor Manual

Issue 4   Part Number 9110270

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Regulatory Notices

FCC

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canada

This Class A digital apparatus complies with Canadian ICES-003.

EU/EMC

This unit complies with the EMC requirement of EN55103-1 and EN55103-2 when operated in an E2 environment in accordance with this manual.

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
7. Clean only with dry cloth.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. No naked flame sources, such as lighted candles, should be placed on the apparatus
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Unplug this apparatus when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
14. Do not expose the apparatus to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

15. CAUTION: Troubleshooting must be performed by a trained technician. To reduce the risk of electric shock, do not attempt to service this equipment unless you are qualified to do so.

16. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

17. This apparatus must be earthed (grounded) by connecting to a correctly wired and earthed power outlet.

18. Ensure that your mains supply is in the correct range for the input power requirement of the unit.

19. In order to reduce the risk of electrical shock, the power cord must be disconnected when the power supply assembly is removed.

20. This equipment is designed to mount in a suitably ventilated 19″ rack; ensure that any ventilation slots in the unit are not blocked or covered.

21. The mains power disconnect device for this unit is the plug-in mains cord rather than a power switch. The mains cord must remain readily accessible for disconnecting mains power.

22. To avoid exposure to dangerous voltages and to avoid damage to the unit, do not connect the rear-panel Ethernet port to telephone circuits.

23. As the colors of the cores in the mains lead may not correspond with the colored markings identifying the terminals in your plug, proceed as follows:

    • The green and yellow core must be connected to the terminal in the plug identified by the letter E, or by the earth symbol ⏚, or colored green, or green and yellow.

    • The blue core must be connected to the terminal marked with the letter N or colored black.

    • The brown core must be connected to the terminal marked with the letter L or colored red.

24. This apparatus must be earthed.

Fuses

WARNING: Check that the correct fuses have been installed. For continued protection against risk of fire, replace only with fuses of the same type and rating.

WEEE

PRODUCT END-OF-LIFE INFORMATION

This product was designed and built by Dolby Laboratories to provide many years of service, and is backed by our commitment to provide high-quality support. When it eventually reaches the end of its serviceable life, it should be disposed of in accordance with local or national legislation.

For current information please visit our website at: http://www.dolby.com/environment

IMPORTANT SAFETY NOTICE

This unit complies with safety standard EN60065 as appropriate. The unit shall not be exposed to dripping or splashing and no objects filled with liquids, such as coffee cups, shall be placed on the equipment. To ensure safe operation and to guard against potential shock hazard or risk of fire, the following must be observed:

o   Ensure that your mains supply is in the correct range for the input power requirement of the unit.
o   Ensure fuses fitted are the correct rating and type as marked on the unit.
o   The unit must be earthed by connecting to a correctly wired and earthed power outlet.
o   The power cord supplied with this unit must be wired as follows:

<div align="center">Live—Brown   Neutral—Blue   Earth—Green/Yellow</div>

(GB)

IMPORTANT – NOTE DE SECURITE

Ce materiel est conforme à la norme EN60065. Ne pas exposer cet appareil aux éclaboussures ou aux gouttes de liquide. Ne pas poser d'objets remplis de liquide, tels que des tasses de café, sur l'appareil. Pour vous assurer d'un fonctionnement sans danger et de prévenir tout choc électrique ou tout risque d'incendie, veillez à observer les recommandations suivantes.

o   Le selecteur de tension doit être placé sur la valeur correspondante à votre alimentation réseau.
o   Les fusibles doivent correspondre à la valeur indiquée sur le materiel.
o   Le materiel doit être correctement relié à la terre.
o   Le cordon secteur livré avec le materiel doit être câblé de la manière suivante:

<div align="center">Phase—Brun   Neutre—Bleu   Terre—Vert/Jaune</div>

(F)

WICHTIGER SICHERHEITSHINWEIs

Dieses Gerät entspricht der Sicherheitsnorm EN60065. Das Gerät darf nicht mit Flüssigkeiten (Spritzwasser usw.) in Berührung kommen; stellen Sie keine Gefäße, z.B. Kaffeetassen, auf das Gerät. Für das sichere Funktionieren des Gerätes und zur Unfallverhütung (elektrischer Schlag, Feuer) sind die folgenden Regeln unbedingt einzuhalten:

o   Der Spannungswähler muß auf Ihre Netzspannung eingestellt sein.
o   Die Sicherungen müssen in Typ und Stromwert mit den Angaben auf dem Gerät übereinstimmen.
o   Die Erdung des Gerätes muß über eine geerdete Steckdose gewährleistet sein.
o   Das mitgelieferte Netzkabel muß wie folgt verdrahtet werden:

<div align="center">Phase—braun   Nulleiter—blau   Erde—grün/gelb</div>

(D)

NORME DI SICUREZZA – IMPORTANTE

Questa apparecchiatura è stata costruita in accordo alle norme di sicurezza EN60065. Il prodotto non deve essere sottoposto a schizzi, spruzzi e gocciolamenti, e nessun tipo di oggetto riempito con liquidi, come ad esempio tazze di caffè, deve essere appoggiato sul dispositivo. Per una perfetta sicurezza ed al fine di evitare eventuali rischi di scossa êlettrica o d'incendio vanno osservate le seguenti misure di sicurezza:

o   Assicurarsi che il selettore di cambio tensione sia posizionato sul valore corretto.
o   Assicurarsi che la portata ed il tipo di fusibili siano quelli prescritti dalla casa costruttrice.
o   L'apparecchiatura deve avere un collegamento di messa a terra ben eseguito; anche la connessione rete deve avere un collegamento a terra.
o   Il cavo di alimentazione a corredo dell'apparecchiatura deve essere collegato come segue:

<div align="center">Filo tensione—Marrone   Neutro—Blu   Massa—Verde/Giallo</div>

(I)

AVISO IMPORTANTE DE SEGURIDAD

Esta unidad cumple con la norma de seguridad EN60065. La unidad no debe ser expuesta a goteos o salpicaduras y no deben colocarse sobre el equipo recipientes con liquidos, como tazas de cafe. Para asegurarse un funcionamiento seguro y prevenir cualquier posible peligro de descarga o riesgo de incendio, se han de observar las siguientes precauciones:

o   Asegúrese que el selector de tensión esté ajustado a la tensión correcta para su alimentación.
o   Asegúrese que los fusibles colocados son del tipo y valor correctos, tal como se marca en la unidad.
o   La unidad debe ser puesta a tierra, conectándola a un conector de red correctamente cableado y puesto a tierra.
o   El cable de red suministrado con esta unidad, debe ser cableado como sigue:

<div align="center">Vivo—Marrón   Neutro—Azul   Tierra—Verde/Amarillo</div>

(E)

VIKTIGA SÄKERHETSÅTGÄRDER!

Denna enhet uppfyller säkerhetsstandard EN60065. Enheten får ej utsättas för yttre åverkan samt föremål innehållande vätska, såsom kaffemuggar, får ej placeras på utrustningen. För att garantera säkerheten och gardera mot eventuell elchock eller brandrisk, måste följande observeras:

o   Kontrollera att spänningsväljaren är inställd på korrekt nätspänning.
o   Konrollera att säkringarna är av rätt typ och för rätt strömstyrka så som anvisningarna på enheten föreskriver.
o   Enheten måste vara jordad genom anslutning till ett korrekt kopplat och jordat el-uttag.
o   El-sladden som medföljer denna enhet måste kopplas enligt foljande:

<div align="center">Fas—Brun   Neutral—Blå   Jord—Grön/Gul</div>

(S)

BELANGRIJK VEILIGHEIDS-VOORSCHRIFT:

Deze unit voldoet aan de EN60065 veiligheids-standaards. Dit apparaat mag niet worden blootgesteld aan vocht. Vanwege het risico dat er druppels in het apparaat vallen, dient u er geen vloeistoffen in bekers op te plaatsen. Voor een veilig gebruik en om het gevaar van electrische schokken en het risico van brand te vermijden, dienen de volgende regels in acht te worden genomen:

o   Controleer of de spanningscaroussel op het juiste Voltage staat.
o   Gebruik alleen zekeringen van de aangegeven typen en waarden.
o   Aansluiting van de unit alleen aan een geaarde wandcontactdoos.
o   De netkabel die met de unit wordt geleverd, moet als volgt worden aangesloten:

<div align="center">Fase—Bruin   Nul—Blauw   Aarde—Groen/Geel</div>

(NL)

This symbol that appears on the unit rear panel is intended to alert the user to the presence of uninsulated "dangerous" voltage within the product's enclosure that maybe of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important safety operating and maintenance instructions.

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Introduction

The Dolby® CP750 Digital Cinema Processor is a direct result of Dolby Laboratories' continued leadership in the development of innovative cinema technologies. The CP750 is a self-contained, all-digital cinema processor. It supports PCM and Dolby Digital audio, as well as Dolby Digital Surround EX™, Dolby Pro Logic®, and Dolby Pro Logic II playback.

With the CP750, you can present high-quality audio from the following audio sources and formats:

- Dolby Digital Cinema system
- Onscreen advertising servers
- Digital VTRs
- Digital satellite or cable TV receivers
- DVDs
- PCM
- Dolby Digital consumer bitstreams

The CP750 provides analog audio inputs for:

- An external six- or eight-channel processor
- A nonsync source
- A public address microphone

Its analog audio outputs are balanced, with a multipin connector configured to the THX standard. Built-in Ethernet, USB, and serial interfaces accommodate PC control and cinema network connectivity.

An independently adjustable global audio delay is assigned to each input to ensure that sound and picture are perfectly synchronized during digital cinema presentations. Different delays can be assigned to different inputs, providing flexibility for alternative content sources, which often require different delays.

The CP750 is compatible with existing theatre automation systems and ASCII command strings. Its ability to handle multiple formats and future upgrades make it an essential tool for an evolving digital cinema market.

Installation is simplified by built-in test instrumentation that includes a real-time analyzer and signal generators for pink noise, sweep tones, tones, and a phase check thumper.

Third-octave equalization, plus bass and treble trim controls, are provided for all channels. A digital parametric equalizer is provided for the Subwoofer channel.

Easily programmed internal software manages audio settings and configuration. The full-featured software package facilitates the setup process.

Calibration settings for one unit can be stored on a PC, and, if desired, transferred directly to another CP750, minimizing the need for additional calibration after repairs. As improvements to the CP750 digital control and processing software are developed, the latest revisions are transferable from a PC to the CP750.

Options available for the CP750 include the Cat. No. 868 Remote Fader and Cat. No. 994 External Power Supply.

1.1   About This Manual

This manual covers both installation and use of the CP750.

Following this introductory chapter are six chapters that give details of various topics:

- Chapter 2 Installation
- Chapter 3 Installing, Launching, and Connecting the Setup Software
- Chapter 4 Configuring the CP750 Software
- Chapter 5 Aligning the Auditorium
- Chapter 6 Remote Control and Monitoring
- Chapter 7 Technical Reference

1.2   CP750 Front Panel

The CP750 front panel shown in Figure 1-1 includes the following components from left to right:

- Front-panel menu navigation buttons
- Status display
- Mute button
- Main fader knob
- USB port for firmware upgrades and setup software
- Seven buttons that select an input source: **Digital 1**, **Digital 2**, **Digital 3**, **Digital 4**, **Multi-Ch Analog**, **NonSync**, and **Mic**
- Four LEDs that indicate the presence of a **Valid** signal on each digital input. **Digital 1** and **Digital 4** have valid signals in Figure 1-1.
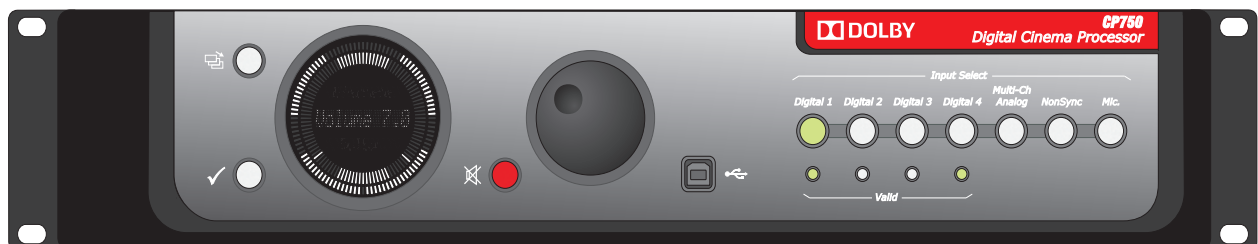
Figure 1-1   CP750 Front Panel

1.2.1   Front-Panel Menu Navigation Buttons

The menu control buttons to the left of the display, shown in Figure 1-1, are used by both the operator and the service engineer to navigate front-panel screen menus, select various menu options, and store setup data.

The menu button is used to step through the menu list. Pressing and releasing the button once changes the display to the next menu item. Pressing and holding the button while rotating the main fader knob steps the display through all menu items.

The check mark button is used to accept the settings displayed on the front-panel screen and store it in CP750 memory. Changes to settings occur immediately, but are not immediately saved.

The button blinks when there are unsaved parameter changes.

Caution: Do not disconnect power to the unit while the checkmark button is blinking.

1.2.2 Front-Panel Status Display

Day-to-day operation of the CP750 is performed through interaction with the front-panel status display shown in Figure 1-2.

Processing Display

The top line displays the processing being applied to the audio. The supported processes are:

- Dolby Pro Logic
- Dolby Pro Logic II
- Dolby Digital
- Dolby Digital Surround EX
- Discrete

Volume Display

The main fader level is displayed as a two-digit number. As with previous generations of Dolby cinema processors, a fader setting of 7.0 (0 dB) is the nominal correct operating level. 7.0 matches the level used during production of the motion picture.

Input Display

The bottom line of the display shows the type of audio being input.

Meter Display

The circle of lights surrounding the display text serves as channel meters when the CP750 is in use.
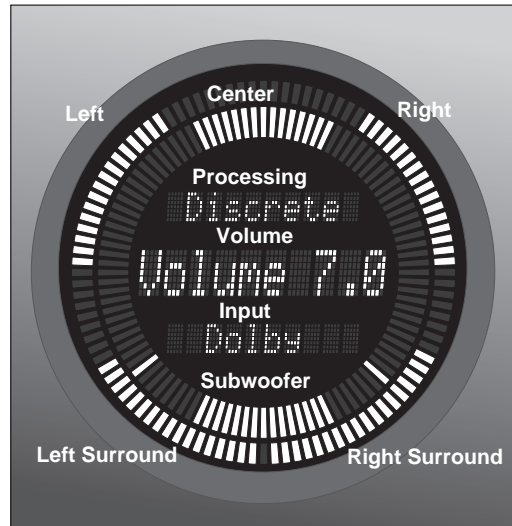
Figure 1-2   Front-Panel Display

1.2.3   Mute Button

Pressing the mute button shown in red in Figure 1-1 fades the audio output to all channels without disturbing the current main fader setting. Fade-in and fade-out speeds are separately adjustable from 0.2 to 5 seconds, using the PC setup software. The mute button flashes red when activated.

1.2.4   Main Fader Knob

Use this knob to adjust the sound level. A fader reading of 7.0 is the nominal correct operating level. The main fader knob rotates continuously with no end stops. The knob is also used to adjust parameters during setup operations.

When the fader knob is rotated between readings of 0 and 4.0, the output level changes in 20 dB steps between –90 and –10 dB. When the fader knob is rotated between readings 4.0 and 10, the output level changes in 3.33 dB steps between –10 and –10 dB. Figure 1-3 shows the characteristic graph.
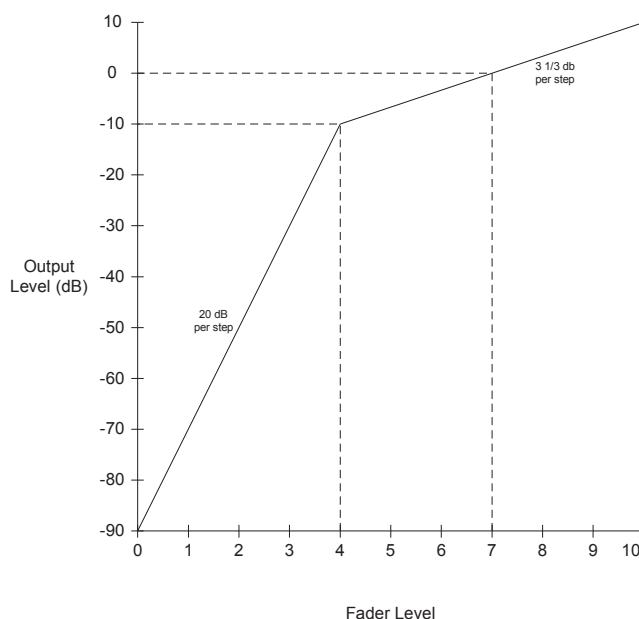
Figure 1-3   Fader Characteristic

1.2.5   USB Port

The USB port is provided for connecting to a PC. You can use it either to set up the unit or to update the CP750 firmware.

1.2.6   Digital Input Selection Buttons

When you press any of the **Digital 1**, **Digital 2**, **Digital 3**, or **Digital 4** push buttons, that button lights up, indicating that the selected input channel is active. Pressing one of these buttons selects a specific digital input source, as shown in Table 1-1. The CP750 switches automatically between PCM and Dolby Digital bitstreams.

Table 1-1   Digital Input Selection Button Functionality

Input Button	Input Source Selected
Digital 1	Selects the input signal from the 4xAES **DIGITAL 1** connector (four-channel pairs, 25-pin D-connector)
Digital 2	Selects the input signal from the 1xAES **DIGITAL 2** connector (BNC)
Digital 3	Selects the input signal from the 1xAES **DIGITAL 3** connector (BNC)
Digital 4	Selects the input signal from the 1xAES **DIGITAL 4** connector (S/PDIF optical)

1.2.7   Valid Input LEDs

Each digital input push button has a green **Valid** LED located beneath it. These LEDs light up when the CP750 detects a valid signal on the respective input, whether or not the input is selected. **Digital 1** and **Digital 4** have valid signals in Figure 1-1.

1.2.8 Analog Inputs

The CP750 has the three analog inputs, listed in Table 1-2.

Table 1-2   Analog Input Options

Analog Input	Rear-Panel Input Source Selected
Multi-Ch Analog	Selects the input signal from the **MULTI-CHANNEL ANALOG INPUT** connector (eight channels, 25-pin D-connector)
NonSync	Selects the input signal from the **NONSYNC INPUT L** and **R** RCA jacks
Mic.	Selects the input signal from the **MIC. INPUT** 3-prong XLR connector

1.3 CP750 Rear Panel
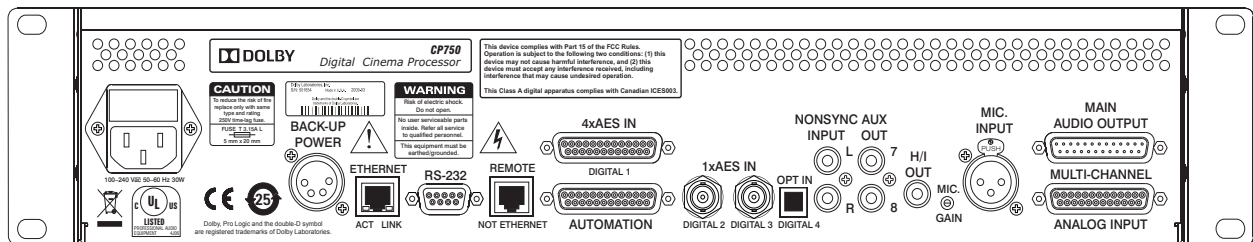
Figure 1-4   CP750 Rear Panel

The CP750 rear panel, shown in Figure 1-2, includes the following components:

- AC input.
- **BACKUP POWER**—4-prong female XLR connector for use with the Cat. No. 994 External Power Supply.
- **Ethernet**—RJ-45 port for remote control through ASCII command strings, Dolby Digital Cinema Theatre Management Software, unit setup, and firmware updates. See Section 7.2.8 for details on the command strings.

> **Note:** The CP750 supports 10Base-T and 100Base-T data rates. Gigabit Ethernet data rate is not supported.

- **RS-232**—9-pin female D-connector for control via ASCII command strings. 9600 baud, no parity, 1 stop bit. See Section 7.2.8 for details on the command strings. See Section 7.2.2 for pinout details.
- **REMOTE**—RJ-45 port for communication with the Cat. No. 868 Remote Fader. See Section 7.2.3 for pinout details. This is not an Ethernet connection but can be connected with any standard Ethernet cable.
- **4xAES IN**—25-pin female D-connector labeled **DIGITAL 1** carrying four digital channel pairs. See Section 7.2.4 for pinout details.
- **AUTOMATION**—25-pin female D-connector for cinema automation control. See Section 7.2.5 for pinout details.
- Two **1xAES IN**—BNC connectors labeled **DIGITAL 2** and **DIGITAL 3**.
- **OPT IN**—Optical S/PDIF input connector labeled **DIGITAL 4**.
- **NONSYNC INPUT**—2 RCA jacks labeled **L** and **R** that accept 3 V_{RMS} maximum input.
- **AUX OUT**—RCA jacks labeled **7** and **8** always carry channel pair 7/8 of the 4xAES input. If present, HI and VI-N signals likely use this pair.

- **H/I OUT**—RCA jack for hearing impaired output. This is a center-weighted sum of L-C-R.
- **MIC. GAIN**—For adjusting the gain of the microphone pre-amp.
- **MIC. INPUT**—3-pin female XLR connector for a PA or auditorium equalization microphone. Phantom power can be applied using the setup software.
- **MAIN AUDIO OUTPUT**—25-pin female D-connector balanced audio output to the auditorium sound system. See Section 7.2.7 for pinout details.
- **MULTI-CHANNEL ANALOG INPUT**—25-pin female D-connector carrying eight balanced analog channels. See Section 7.2.7 for pinout details.

1.3.1 AC Input

This is a simple unswitched IEC power inlet module.

1.3.2 Backup Power Port

This is a 4-pin female XLR connector for use with the Cat. No. 994 External Power Supply.

1.3.3 Ethernet Port

This is an illuminated RJ-45 10/100BASE-T Ethernet port with activity LEDs, which provides an interface to a Dolby Digital Cinema network and also ASCII string commands over TCP to port 61408. You can also use this port for setup software and firmware upgrades.

1.3.4 RS-232 Serial Port

You can use this port for serial control using ASCII string commands.

The equipment connected to this port should have its serial port set to 9600 baud, no parity, 1 stop bit. Use a pin-to-pin serial cable.

The same control functions are available through the Ethernet port.

1.3.5 Remote Connector

This is not an Ethernet connection, but an Ethernet cable is used to connect to the Cat. No. 868 Remote Fader.

1.3.6 4xAES IN Connector

This 25-pin female D-connector, linked to the **Digital 1** button, receives four AES/EBU streams. The four AES input signals must be time aligned with each other. Typically, this input connects to a Dolby Digital cinema server. It accommodates PCM audio at 96, 48, and 44.1 kHz, and 32 kHz (16, 20, and 24 bits) and Dolby Digital at all data rates and sample rates. The decoding of Dolby Digital is restricted to the first AES3 channel pair. This connector has a floating ground.

1.3.7 Automation Connector

This connector is used to select an audio input, to read back the currently-selected input, and to remotely assert the mute command. The pinout is listed in Section 7.2.5.

The automation subsystem is referenced to pin 12, Automation Return. This is the ground for these functions, and is connected to the ground of the CP750 only through a 1 kΩ resistor. An isolated power supply is provided so that connection to automation systems can be made without introducing hum due to ground loops.

Caution: The isolated power supply can only function properly if the Automation Return pin is within ± 5 Volts DC (or peak AC) of the CP750 chassis ground.

The automation control system is designed to accept contact closure inputs. A closed contact asserts a command. The low side of the contact closing switch or relay should be connected to Automation Return.

Warning: UNDER NO CIRCUMSTANCES should power from an external source be supplied to any pin in this connector! Connecting external power is likely to damage the CP750.

1.3.8 1xAES IN Connectors

These BNC connectors are linked to the **Digital 2** and **Digital 3** buttons. They accommodate PCM audio at 96, 48, and 44.1, and 32 kHz (16, 20, and 24 bits) and Dolby Digital at all data rates and sample rates. A BNC male to RCA female adapter can interface with most consumer gear. These connectors have floating grounds.

1.3.9 Opt In Connector

This optical connector is linked to the **Digital 4** button. It accommodates PCM audio at 96, 48, 44.1, and 32 kHz (16, 20, and 24 bits) and Dolby Digital at all data rates and sample rates.

1.3.10 NonSync Input Connector

2 RCA jacks labeled **L** and **R** that accept 3 V_{RMS} maximum input.

1.3.11 Aux Out Connectors

These analog output represents channel pair 7/8 of the 4xAES input.

For the top output labeled **7**, the source is Channel 7 of the 4xAES input. No equalization or level control is applied.

For the lower output labeled **8**, the source is Channel #8 of the 4xAES input. No equalization or level control is applied.

1.3.12 H/I Out Connector

The hearing-impaired output signal, on the female RCA connector labeled **H/I Out**, is unbalanced. It is a center-weighted analog sum of the L, C, and R channels.

1.3.13 Mic. Gain

This multi-turn trimpot adjusts the gain of the mic preamp. If you use the microphone input for public address purposes, adjust this control for the desired volume in the auditorium. If you use it only for cinema alignment purposes, the trimpot will be adjusted using the setup software.

1.3.14 Mic. Input

This input is for use with a balanced output microphone. Phantom power is provided, and can be turned on and off under software control using the setup software.

1.3.15 Main Audio Output Connector

This connector is an eight-channel analog output (L, C, R, Ls, Rs, SW, Bsl, and Bsr), which is present on a male 25-pin D-connector (300 mV reference level).

Bsl and Bsr channels are required for Dolby Digital Surround EX™ installations. For other installations these channel can be configured to represent channel pair 7/8 of the 4xAES input. These mutually exclusive options are configured in the setup software.

1.3.16 Multi-Channel Analog Input Connector

This connector is an eight-channel analog input (L, C, R, Ls, Rs, SW, Bsl, Bsr) designed to receive 300 mV$_{RMS}$ (ref) inputs from external sources and inputs on a female 25-pin D-connector. These inputs are balanced and floating, but the common mode voltage must not exceed ± 6 V peak.

Send Us Your Feedback About This Section

If you have a question or comment about this chapter, send us an email.

Installation

2.1   CP750 Floating Signal Grounds

The CP750 is designed to eliminate ground loops, which can occur when the unit is connected to multiple external equipment grounds. For this reason, the following CP750 connectors have isolated grounds:

- **MAIN AUDIO OUTPUT** and **MULTI-CHANNEL ANALOG INPUT**—Eight-channel input and output are balanced and floating. Note that a common mode signal between the CP750 audio outputs and its chassis ground must not exceed ±6 V peak.

- **AUTOMATION** connector—The common is floating and can be ±5 V peak from the chassis ground.

- **1xAES IN** BNC digital inputs—These are transformer isolated and their grounds can be ±10 V peak from the chassis ground.

- **4xAES** D-connector digital inputs—These are transformer isolated and their grounds can be ±10 V peak from the chassis ground.

> **Note:** The RS-232 input ground is connected to the CP750 chassis ground and is *not* floating.

2.2   Digital Audio Inputs

There are two professional interface standards for digital audio transmission: AES/EBU (also known as AES3) and AES-3id. These methods stream the same digital data and professional audio header information over copper conductor links, but use different types of conductors and connectors.

AES/EBU uses a balanced connection (two conductors plus shield) with a characteristic input impedance of 110Ω, a nominal peak-to-peak signal level of 5 V, and, most commonly, XLR connectors. The typical maximum transmission distance is 100 meters (328 feet). AES-3id uses an unbalanced connection (one signal conductor plus shield) with a characteristic input impedance of 75Ω, peak-to-peak signal level of 1 V, and BNC ("push and twist") connectors. The typical maximum transmission distance is 1,000 meters (3,280 feet).

Professional digital audio equipment typically uses the AES/EBU method because balanced operation yields superior noise immunity, as it does with analog audio signals, and because XLR connectors are the standard on analog professional audio equipment.

Professional video equipment typically uses the AES-3id interface, with BNC connectors. As with XLR connectors on professional audio equipment, the adoption of BNC connectors for the audio on professional video equipment stems from their use for the video signal. Also, the unbalanced AES-3id signal can connect to more than one piece of

equipment by using the loop-through connectors available on some devices. The signal is robust for long cable runs.

2.2.1 Consumer Interface Standards for Digital Audio

The consumer interface standard for digital audio transmission is S/PDIF (IEC 61937). S/PDIF uses coaxial unbalanced connections (one signal conductor plus shield) with a characteristic input impedance of 75Ω with RCA (phono) connectors, or a fiber-optic cable link. The unbalanced coaxial connection has a peak-to-peak signal level of 0.5 V. The typical maximum transmission distance is 10 meters (33 feet). Although S/PDIF-specific cables with suitable connectors can be purchased, you can also obtain good results using high-quality 75Ω video cable with the appropriate connectors and/or adapters.

2.2.2 Cable Issues

Even in digital audio, noise-free signals are very important. The cable used for digital signals is specifically designed for such use, although it looks the same as the cable used for analog audio or video signals. Any professional audio equipment or broadcast supply company can provide 110Ω cable with connectors (or without, if you'd like to terminate them yourself) for AES/EBU connections, and high-quality 75Ω video cables with BNC connectors for AES-3id connections. Use of cables or connectors not designed for digital transmission or with incorrect impedance compromises the integrity of the bitstream. This can result in unreliable hardware interconnections, especially with long cable runs.

2.2.3 Multiple Sources: Conversion Between Interface Standards

Although some details of the bitstreams used in the AES and S/PDIF standards are different, the audio information is exactly the same. As a result, most audio equipment accepts either standard with no need to convert the bitstream itself; this is the case with the CP750. However, if you intend to connect sources across different types of digital audio inputs, do not attempt to convert a digital interface type by directly wiring an XLR connector to a BNC or RCA plug. This causes an impedance mismatch and signal reflections, resulting in digital waveform degradation. This may appear to work, but the results are unreliable and dropouts occur.

For conversion between the AES-3id and S/PDIF formats, you can use high-quality RCA-to-BNC adapters because the cable and impedance are both the same (75Ω).

For conversion between the AES/EBU and AES-3id or AES/EBU and S/PDIF formats, a simple and economical method uses inline transformers. These devices perform the necessary impedance and balanced/unbalanced conversion. Table 2-1 shows some examples of suitable adapters. The unbalanced connector in these examples is BNC.

You can add BNC-to-RCA adapters for connecting to consumer S/PDIF connections. The following units use passive circuitry.

Table 2-1   Examples of Available Balanced/Unbalanced Adapters

Adapter Type	Neutrik®	Canare®
XLR female 110Ω in to BNC female 75Ω out	NA-BF	BCJ-XJ-TRA
BNC female 75Ω in to male XLR 110Ω out	NA-BM	BCJ-XP-TRA

Higher-priced units incorporating active circuitry are also available. These offer additional features such as multiple inputs, inputs for optical connections, and multiple outputs.

2.3   Mounting the CP750

To avoid heat or hum pickup problems, do not mount the CP750 immediately above or below power amplifiers. Locate power amplifiers away from the CP750 to avoid hum pickup problems. Always leave a 1-U space (43 mm, or 1.75 in) above and below the CP750 to provide adequate ventilation. Install an air guide or baffle to deflect hot any air coming from equipment below the CP750.

To ensure good ground contact, install a star washer on at least one (and preferably all) rack-mounting screws as shown in Figure 2-1. This will also aid in the prevention of electrical noise problems.
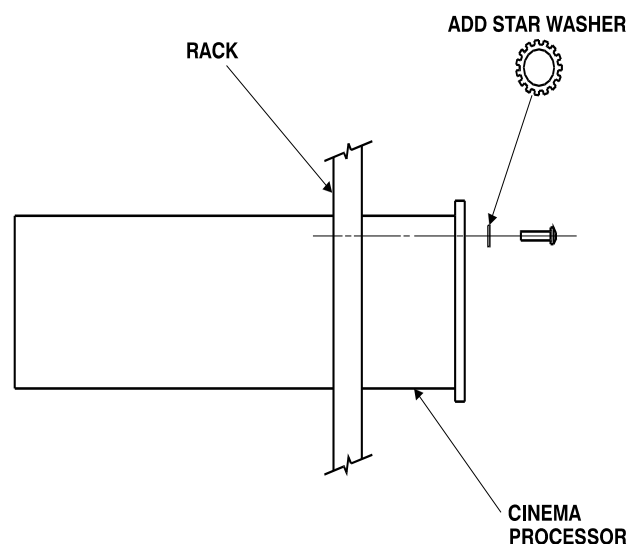
Figure 2-1   Star Washers and Rack-Mounting Screws

Proper shielding and termination of cables and cable assemblies are also very important. Follow the methods shown in the wiring diagrams.

2.4   Connections

To connect the CP750 to your auditorium equipment, refer to Figure 2-2 .

For proper operation in locations where there is considerable interference, strictly adhere to the cable types, lengths, and pin assignments. Shields must connect only to the chassis and should not be paralleled with the negative side of inputs or outputs.

Connector pinouts are listed in Section 7.2.

2.5   Fuse Information

The CP750 uses a universal-switching power supply that handles the full range of nominal mains voltages between 100 and 240 VAC, and any frequency between 50 and 60 Hz. If a power supply fuse blows, do not attempt to replace it. Instead, contact Dolby Laboratories.

2.6 Mains Power Wiring

In some countries, the primary mains cable may not have a connector fitted. Nonterminated leads must be properly wired to an approved mains connector in accordance with the following international code:

- Brown wire: live or hot
- Blue wire: neutral
- Green wire: mains ground

Warning: If you are uncertain about the wiring of your AC mains outlet, do not use it. Consult a qualified electrician.

2.7 Cable Diagram

The cable diagram for the CP750 rear panel is on .

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If you have a question or comment about this chapter, send us an email.

Notes:

1. Follow all local electrical and building codes.

2. Use earthed (grounded) conduit wherever possible. Avoid routing signal wiring near electric motors, rectifiers, power wiring, dimmer wiring, or other sources of electrical noise.

3. For two-conductor with shield wiring, use Belden 8451 two-conductor shielded cable or equivalent: tinned copper, twisted pair, 22 AWG stranded tinned copper drain wire, aluminum-polyester shield, 100 percent shield coverage, conductor to conductor (111 pF per meter).

4. All shields must be connected to the chassis of the CP750 or DSP100/DSS200 rather than to circuit (audio) ground. This achieves the RF interference immunity required by European EMC standards. For D-connectors, a metal housing must be used and the shields must be connected

CP750 INSTALLATION WIRING

Figure 2-2 CP750 Inputs and Outputs

Installing, Launching, and Connecting the Setup Software

The CP750 is designed and built to be set up and administered remotely by software. Once installed and configured, the CP750 remote application gives you access to all of the unit's functions.

Begin by installing the software on a PC, which you can connect to the CP750 with a USB cable.

3.1   System Requirements

The CP750 setup software runs on Microsoft® Windows® XP and Windows Vista.

3.2   Installing the Software

To install the CP750 setup application, follow these steps:

1. Open the **CP750 Setup** folder and run CP750Setup_x_x_x.exe. This file is named with the current software version number.

    The installer opens displaying the screen shown in Figure 3-1.

Figure 3-1   Installer Welcome Screen

2. Select the desired language.
3. Follow the screen prompts until the installation is complete.

3.3 Connecting the Hardware

There are three ways to connect computer hardware to the CP750.

- The USB port on the front panel of the unit, shown in Figure 1-1, is expressly designed for easy connection to laptop computers with a standard A to B cable.
- You can connect a pin-to-pin serial cable to the **RS-232** connector on the unit rear panel.
- You can connect directly to the **Ethernet** connector on the unit rear panel. If your laptop supports Gigabit Ethernet, use a standard Ethernet cable. Otherwise, use a crossover cable.

3.4 Launching the Setup Application

To launch the CP750 setup application, click the **Start** button and scroll to **Programs**. In the **Dolby** folder, double-click **Dolby CP750 Setup**.

The Dolby® CP750 setup window appears, as shown in Figure 4-1.

3.5 Connecting to a Local or Remote Device

You can use the setup software **Action** menu, shown in Figure 3-2, to connect to a local or a remote device.
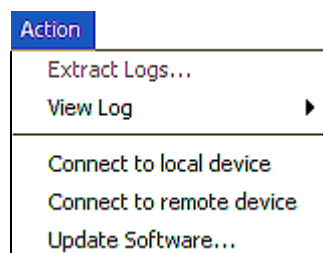
Figure 3-2   Action Menu

These options allow you to connect to a CP750 that is either connected to your PC (local device) or connected to an Ethernet network (remote device). If you select **Connect to remote device,** the system prompts you to enter an IP address.

You must change your laptop's TCP/IP properties to communicate properly with the CP750 when connecting the setup software to a CP750 using a PC Ethernet connection. We recommend the following TCP/IP settings to enable your PC to communicate with a CP750 using its default setting.

IP address: 192.168.1.200
Subnet mask: 255.255.255.128
Default gateway: 192.168.1.129

Note: The CP750 default IP address (for connecting) is 192.168.1.136.

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Configuring the CP750 Software

4.1　Using the Application Tabs to Configure a CP750

Each setup application tab controls a different part of the application's function. They are discussed separately in the following sections.

- Profile Tab—Lets you enter identifying information that is important for service calls and technical support
- Network/Time Tab—Lets you specify unit addresses and connections
- General Settings—Lets you define a power-on mode, a subwoofer filter frequency, and a surround delay for the CP750.
- Input Settings—Lets you define attributes and processing for each input
- Alignment—Lets you optimize the sound in the auditorium. This important topic is described in detail in Chapter 5.

4.1.1　Profile Tab

When you launch and connect the CP750 setup software, the application opens with the **Profile** tab active, as shown in Figure 4-1.

Figure 4-1　Profile Tab

Here you enter identifying information about the auditorium equipment. This system information is particularly important if a service call is ever necessary. The key items are:

- **CP750 Serial Number**—Read the number from the back of the CP750 unit.

- **Theatre Name**–This must match the name registered in your Theatre Management Software (TMS).
- **Auditorium Number**–This must match the number assigned to the Show Player.
- **Cinema Processor**—Enter a name for your CP750.
- **Digital Cinema System**—Identifying numbers for your cinema processing equipment.
- **Digital Cinema Projector**—Identifying information for your projector.
- **Input Descriptions**—The identifying text you enter here is repeated as the titles of the **Input Settings** tab.

Tip: Assigning clear names to the digital inputs is an easy way to prevent input selection errors.

The **Profile** tab displays the current network settings, but you can modify them only on the **Network/Time** tab.

4.1.2   Network/Time Tab

The **Network/Time** tab, shown in Figure 4-2, lets you configure the CP750 Ethernet settings and time and date settings.

The host name and IP address are echoed, read-only, on the **Profile** tab. Network configuration and status are also available though the ASCII control interface.

Ethernet Settings

By default **DHCP** is turned off, and entries follow the Dolby® Digital Cinema private network address naming convention in which the third octet indicates the auditorium number:

- **Host Name**: CP750xxxxx
- **IP Address**: 192.168.x.136
- **Subnet Mask**: 255.255.255.128
- **Default Gateway**: 192.168.x.129

If you are using the Dolby TMS you need only enter the auditorium number in the third triad of the **IP Address** and **Default Gateway** fields.

DHCP

As soon as you click **Enable**, the **IP Address**, **Subnet Mask**, and **Default Gateway** change to **0.0.0.0** while the unit searches for a server and acquires valid addresses. This search and acquisition process may take up to 30 seconds.

If no server is found, the displays stay at 0.0.0.0 past 30 seconds.
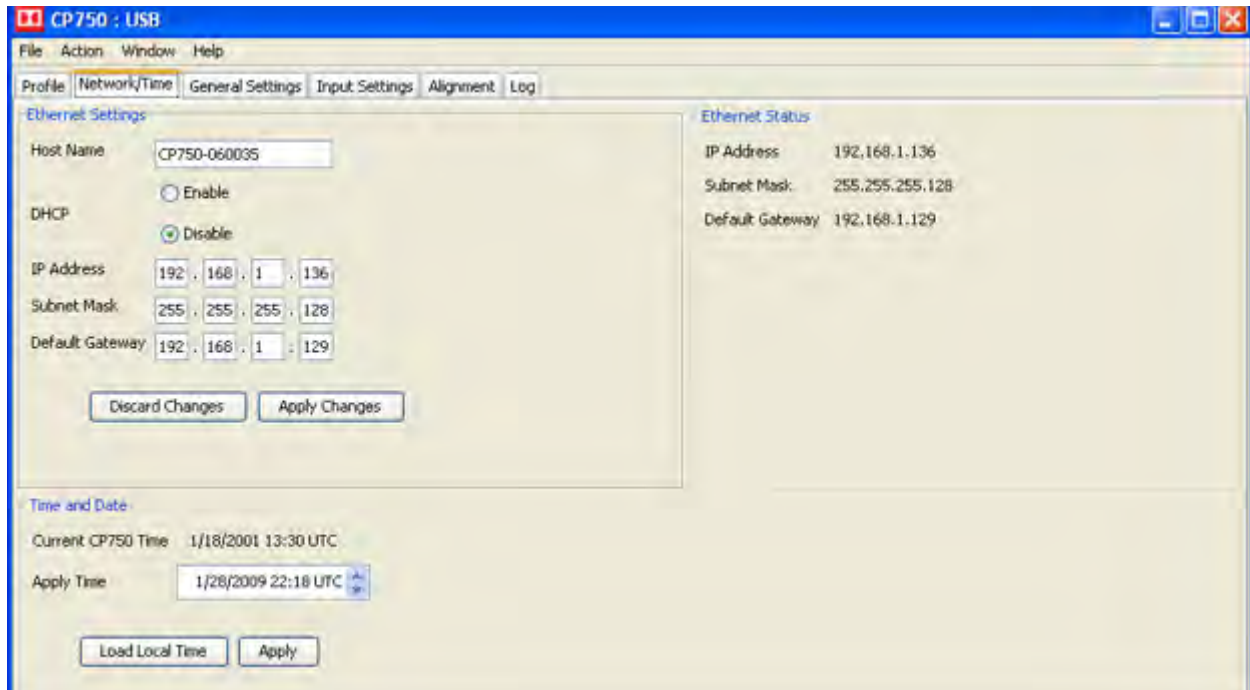
Figure 4-2   Network/Time Tab

If you make any changes, the system highlights two action buttons. Click one to either **Discard Changes** or **Apply Changes**.

Time and Date

You can change the time manually by dialing with the arrows in the **Apply Time** field.

You can also load the local time from a server by clicking the **Load Local Time** button.

You must click **Apply** to make changes to the unit's stored date and time.

4.1.3   General Settings

This tab, shown in Figure 4-3, lets you set four system attributes:

- Power-on Mode
- Surround Delay
- Main Audio Output Configuration
- Mute Duration
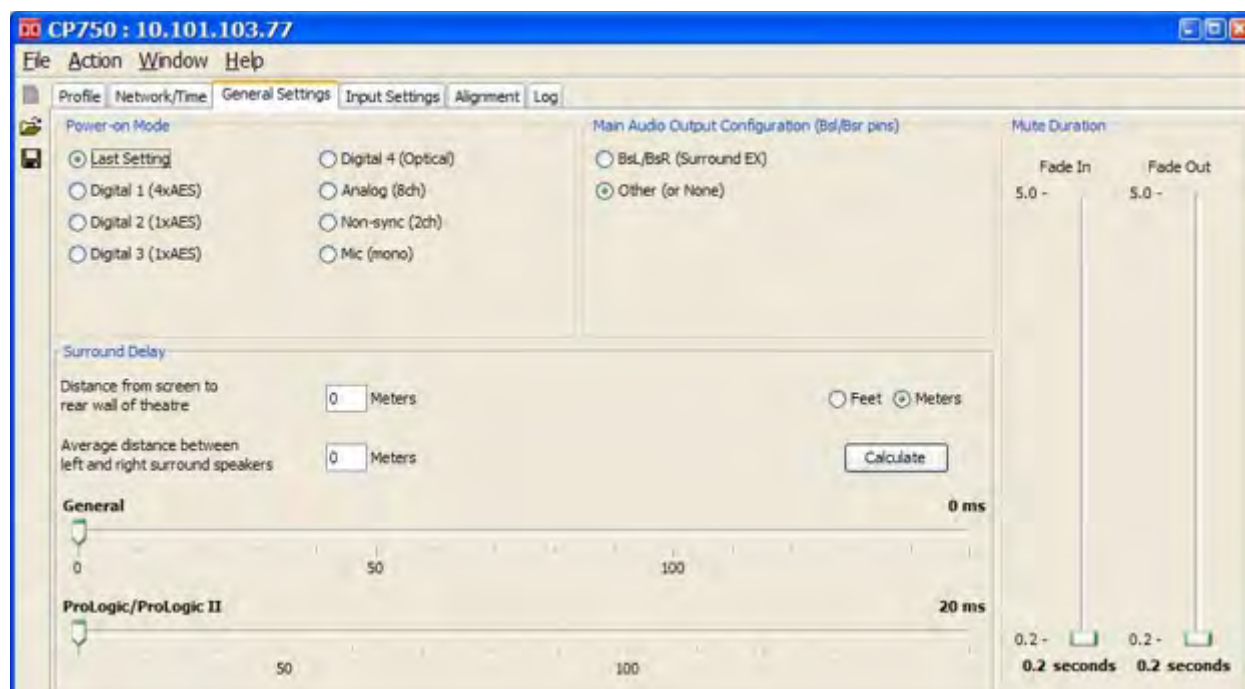
Figure 4-3 General Settings Tab

Power-on Mode

The **Power-on Mode** selects the input that is activated when the CP750 unit is powered on. You can select **Last Setting**, or any of the inputs.

Surround Delay

The setup application can calculate and set the **General** surround delay value based on theatre measurements entered here. Measurements may be entered in feet or meters.

1. Click **Feet** or **Meters** to choose a unit of measure.
2. Enter a **Distance from screen to rear wall of theatre** value between 0 and 200.
3. Enter an **Average distance between left and right Surround channels** value between 0 and 140.
4. Click **Calculate**.

The **General** value is adjustable from 0 to 150 ms in 1 ms steps. The display shows a marker every 10 ms.

After you set the general surround delay for digital material, set the **Pro Logic/Pro Logic II** value which is applied to analog material. The minimum value for this slider is **20** ms because this value should always be 20 ms higher than the **General** value.

Main Audio Output Configuration

You can indicate that your auditorium is set up to use Dolby Digital Surround EX™.

Mute Duration

The **Fade In** and **Fade Out** slider each have a range of 0.2 to 5.0 seconds in 0.1 second steps. Set a value either by moving the slider.

4.1.4   Input Settings

The **Input Settings** tab of the set up application consists of a separate tab for each input described separately in the sections that follow.

4.1.5   Digital Input 1

Figure 4-4 shows the **Digital Input 1** tab. The tab title is repeated from the **Digital 1** input description on the **Profile** tab.
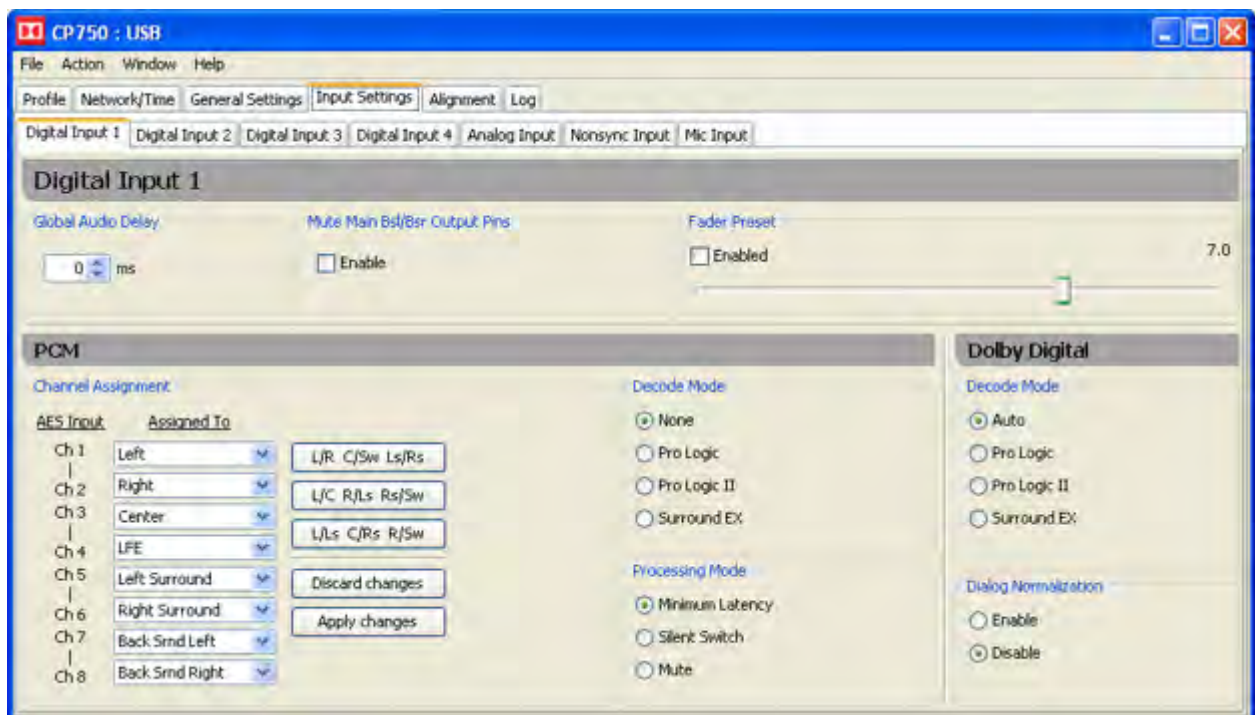
Figure 4-4   Digital Input 1 Tab

On the Digital Input 1 tab you can configure:

- Global Audio Delay
- Mute Main Bsl/Bsr Output Pins
- Fader Preset
- PCM Channel Assignment
- PCM Decode Mode
- PCM Processing Mode
- Dolby Digital Decode Mode
- Dolby Digital Dialogue Normalization

Global Audio Delay

The **Global Audio Delay** field specifies an audio delay in addition to the CP750 decoding delay of approximately 7 ms for 4xAES PCM. Use this function to synchronize the audio with the video from digital cinema projectors, which add a video processing delay. Use the up and down arrows to set the **Global Audio Delay** between 0 and 250 ms. This delay value is set independently for each digital input.

Note: Systems that use an external video scaler may add another decoding delay.

Mute Main Bsl/Bsr Output Pins

Choose **Enable** to mute these pins if your auditorium does not use them.

Fader Preset

To use the **Fader Preset** feature, choose **Enable** and indicate a value on the slider. This ensures that inputs play at correct values each time they are selected.

PCM Channel Assignment

The analog audio output channels (L, R, C, LFE, Ls, Rs) are always fixed and hardwired to a cinema processor. However, when a PCM bitstream's input-channel mapping is not a default SMPTE configuration (L/R, C/LFE, Ls/Rs), you must reassign the input channels to match the hardwired audio outputs. For channel reassignment, the surround delay and the LFE filter are always tied at the output, and therefore cause no problem.

To reassign the input channels, use the drop-down **Assigned To** menu for each of the **AES Input** channels or click one of the three preset buttons (**L/R C/Sw Ls/Rs**; **L/C R/Ls Rs/Sw**; or **L/Ls C/Rs R/Sw**). To activate your changes, click the **Apply changes** button. To cancel your changes, click the **Discard changes** button.

PCM Decode Mode

You can select one of four surround channel processing options:
*   **None**
*   **Pro Logic**
*   **Pro Logic II**
*   **Surround EX**

PCM Processing Mode

You have three choices of mode:
*   **Minimum Latency**—When selected, this default mode provides the quickest audio processing (approximately 7 ms) for PCM audio.
*   **Silent Switch**—When selected, the CP750 constantly checks for transitions between PCM and coded audio, and switches between the two silently. This mode adds a 40 ms latency to the audio processing (for a total latency of approximately 47 ms).

• **Mute**—When selected, PCM audio is muted. Dolby Digital plays normally.

> **Note:** Both **Minimum Latenc**y and **Silent Switch** automatically switch between PCM and coded audio. **Minimum Latency** may produce an audible snat during the transition.

Dolby Digital Decode Mode

You choose how the system decodes a two-channel input stream. There are four options:

• **Auto**
• **Pro Logic**
• **Pro Logic II**
• **Surround EX**

Auto decode mode follows the surround metadata parameter embedded in the coded bitstream. There is no metadata in PCM audio. If you choose **Pro Logic** or **Pro Logic II** decoding, your choice overrides the presence or absence of surround metadata in two-channel coded bitstreams.

Dolby Digital Dialogue Normalization

When enabled, this option sets the decoder level shift according to the metadata embedded in the Dolby Digital bitstream. The default is **Disable**.

4.1.6   Digital Inputs 2, 3, and 4

The options available on these three tabs are identical. Figure 4-5 shows the **Digital Input 2** tab. The tab titles are repeated from the input descriptions on the **Profile** tab.
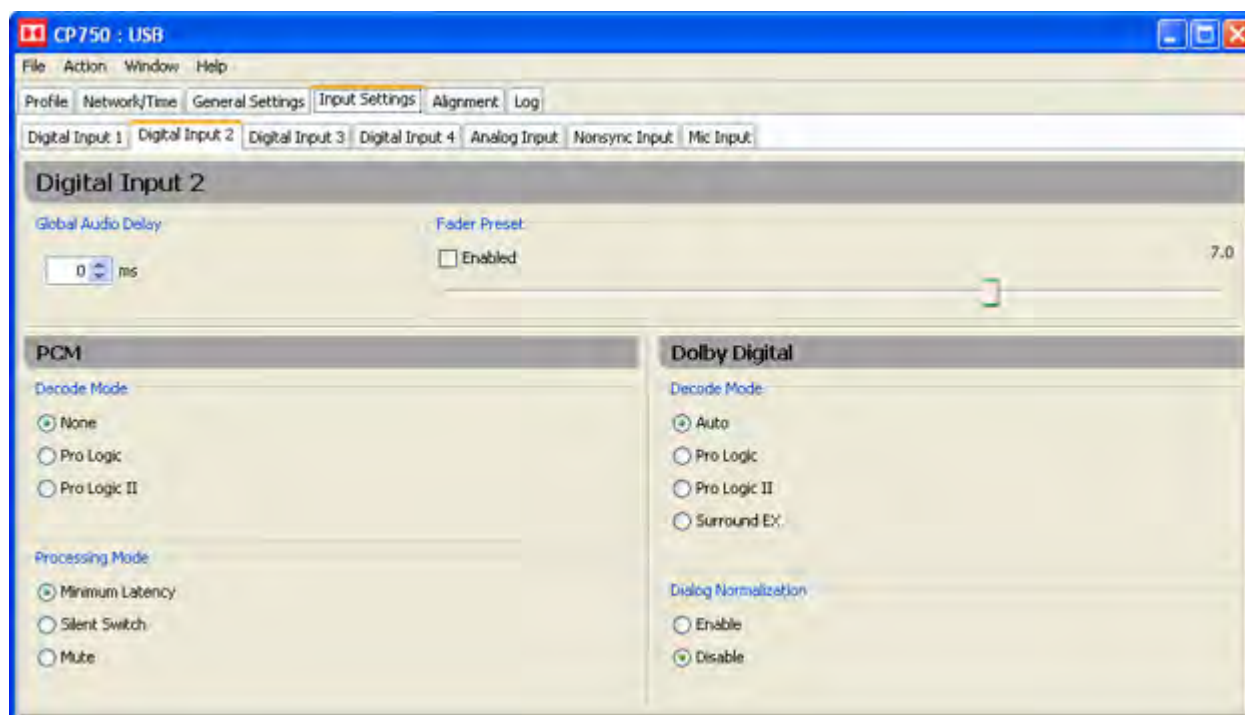
Figure 4-5   Digital Input 2 Tab

For these inputs you can configure:

- Global Audio Delay
- Fader Preset
- PCM Decode Mode
- PCM Processing Mode
- Dolby Digital Decode Mode
- Dolby Digital Dialogue Normalization

The options for **Global Audio Delay**, **Fader Preset**, **PCM Processing Mode**, **Dolby Digital Decode Mode**, and **Dolby Digital dialogue normalization** and are identical to those on the **Digital Input 1** tab.

PCM Decode Mode

There are three decoding options for two-channel PCM streams:

- **None**
- **Pro Logic**
- **Pro Logic II**

4.1.7   Analog Input

Figure 4-6 shows the **Analog Input** tab.
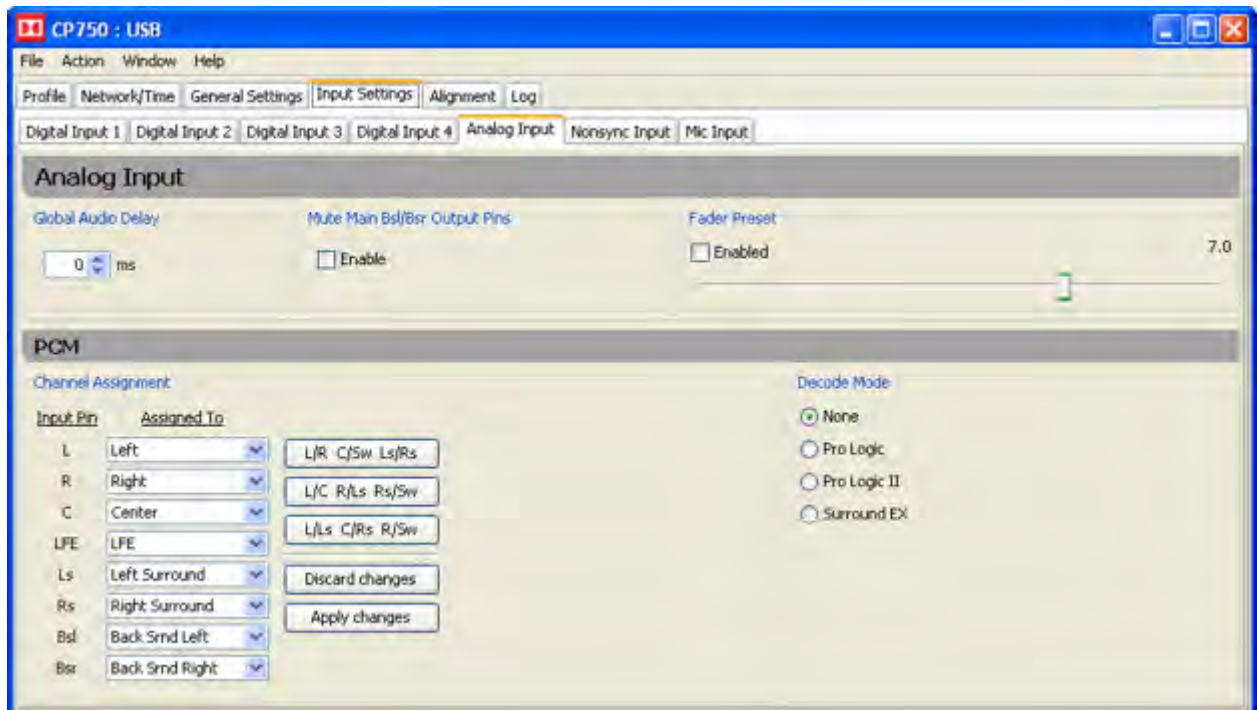
Figure 4-6   Analog Input Tab

On this tab you can set:

- Global Audio Delay
- Mute Main Bsl/Bsr Output Pins
- Fader Preset
- PCM Channel Assignment
- PCM Decode Mode

These choices operate identically to those on the **Digital Input 1** tab.

4.1.8   Nonsync Input

On the **Nonsync Input** tab, shown in Figure 4-7, you can choose:

- Global Audio Delay
- Fader Preset

The options operate identically to those on other tabs.

You can choose any of six supported formats for PCM:

- Format 60 Nonsync
- Format 70 Mono CS
- Format 71 Mono C
- Format 73 Pro Logic LCR
- Format 74 Pro Logic with no subwoofer
- Format 75 Pro Logic with a subwoofer

You can also set an **Input Trim** using the slider.
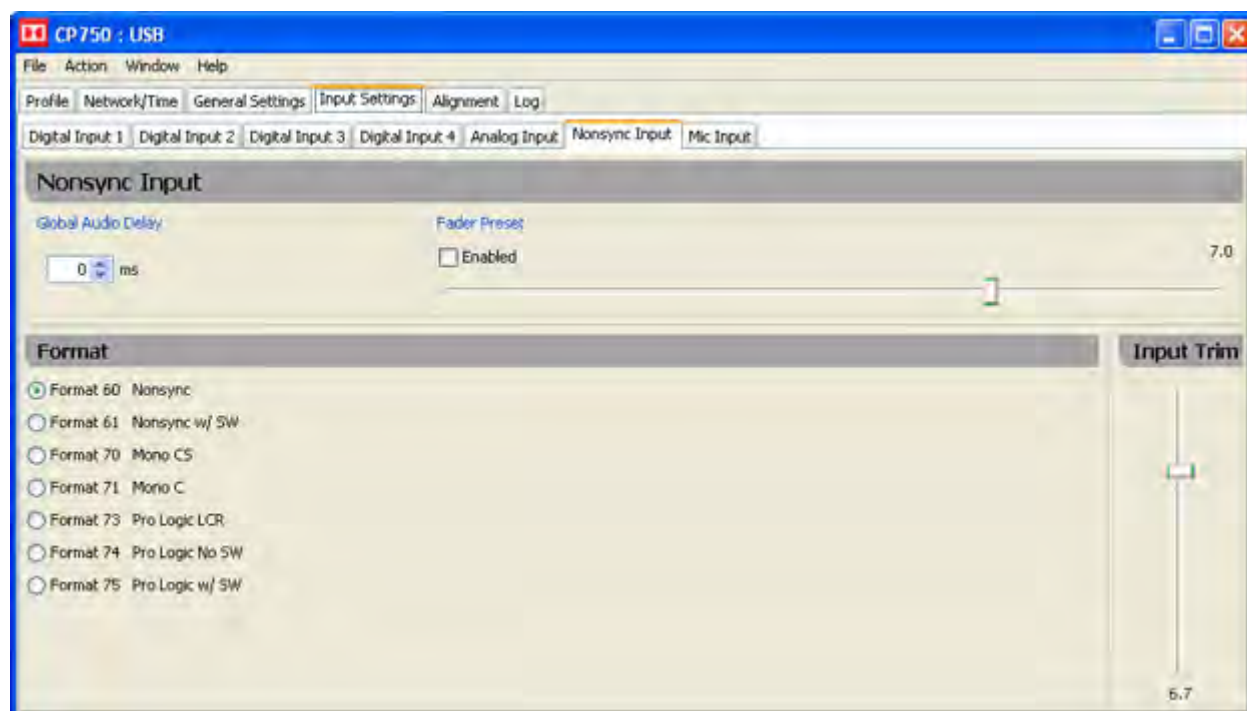
Figure 4-7   Nonsync Input Tab

4.1.9   Mic Input

On the **Mic Input** tab, shown in Figure 4-8, you can choose:

- Global Audio Delay
- Fader Preset

The options operate identically to those on other tabs.

The PCM **Channel Assignment** field allows you to assign the microphone input either the **Center** channel or the **Surrounds**.

In the **Phantom Power** field, you can enable phantom power to the microphone as needed.
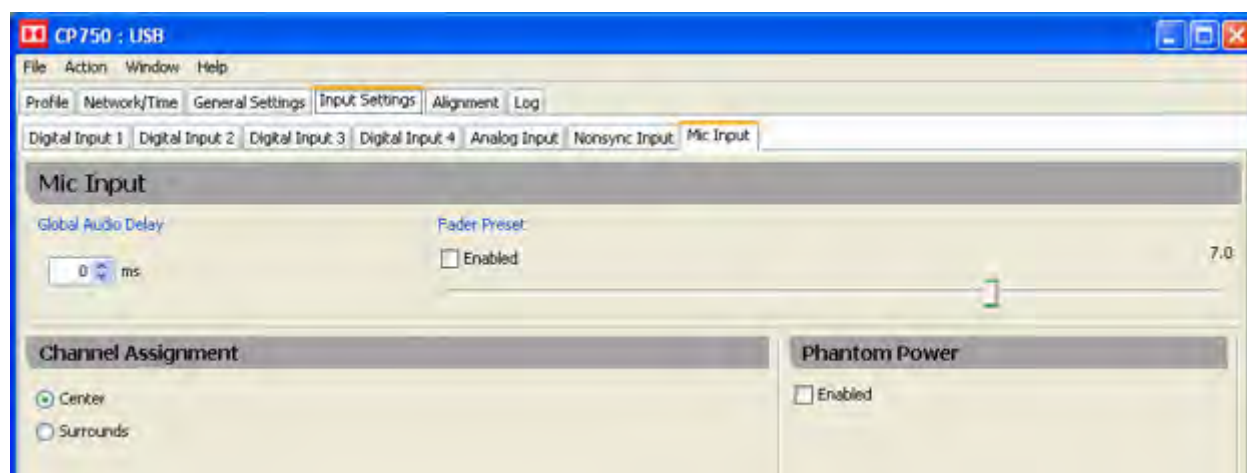
Figure 4-8   Mic Input Tab

4.2   Saving Settings in a Configuration File

When you have completed configuration work on the CP750, you can save your settings to a .dlb parameter file. We recommend saving configuration files for use in the event your unit ever needs to be replaced.

Caution: Take care to identify the settings file clearly, and store it separately from software update files, which also use the .dlb extension.

Chose **Save** in the **File** menu as shown in Figure 4-9, browse to the location on your PC where you want to save the file, enter a file name, and click **Save**.
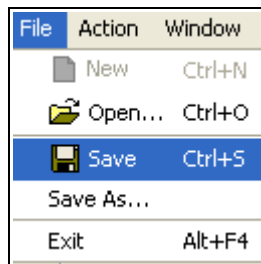
Figure 4-9   Selecting Save in the File Menu

To modify an existing .dlb file and save it under a different name, open the file, then select **Save As** in the **File** menu.

4.3   Loading a Saved Configuration File

A CP750 can be restored from an existing .dlb configuration file.

To do so, choose **Open** in the **File** menu of the setup application, browse to the desired .dlb file on your PC, and open it.
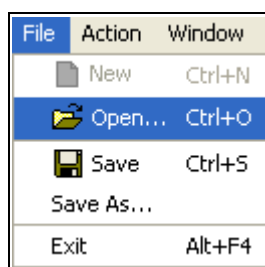
Figure 4-10   Selecting Open in the File Menu

4.4   Using Expert View

When you choose **Expert View** on the **Window** menu, all the CP750 parameters and command strings are available as shown in Figure 4-11.You can modify a parameter highlighted in green by double clicking it and typing a new value. To return to the tab display, reselect **Expert View**.
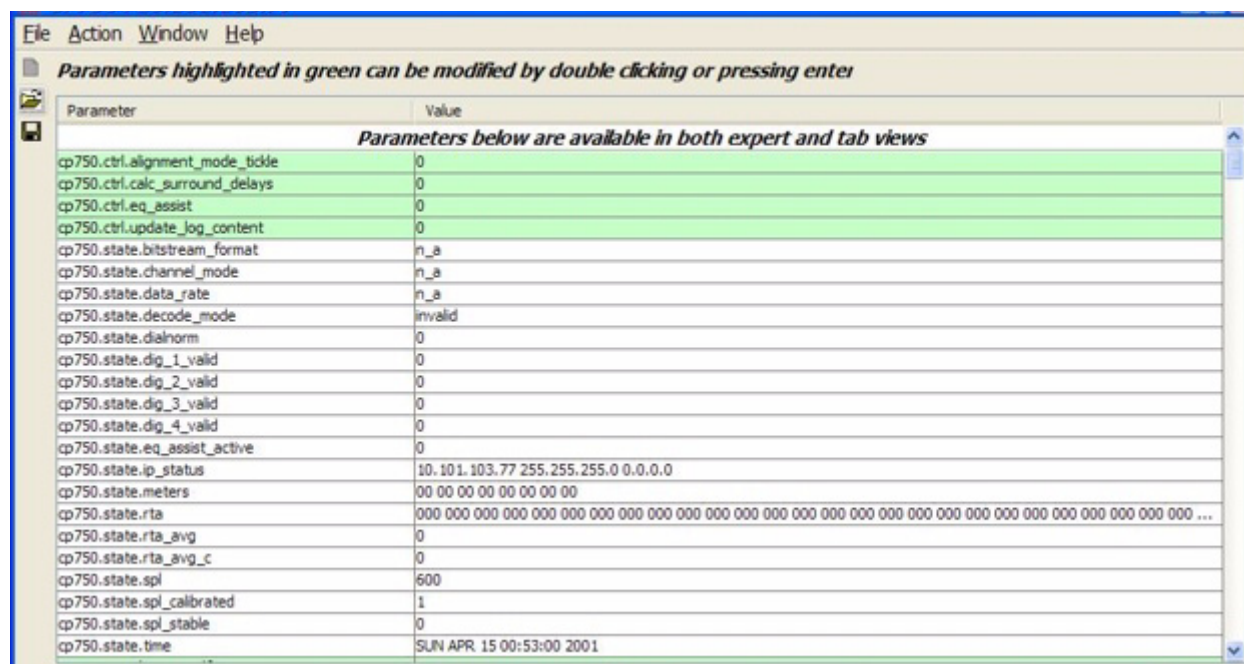
Figure 4-11 Expert View Window

4.5 Updating the CP750 Firmware

When you choose **Update Software** on the **Action** menu, the setup software closes and Dolby Software Update automatically opens and connects. You can then update the CP750 firmware by following these directions. When the update is completed, Dolby Software Update closes and the setup software opens and reconnects.

To update the CP750 firmware:

1. Obtain the latest version of the CP750 setup application from Dolby Laboratories and install it on your PC.
2. Obtain the .dlb update file from Dolby Laboratories and copy it to your PC.
3. Connect your PC to the USB port on the CP750 front panel.
4. Click **Update Software** on the **Action** menu to begin the update process.

   The **Dolby Software Update** window, shown in Figure 4-12, opens.
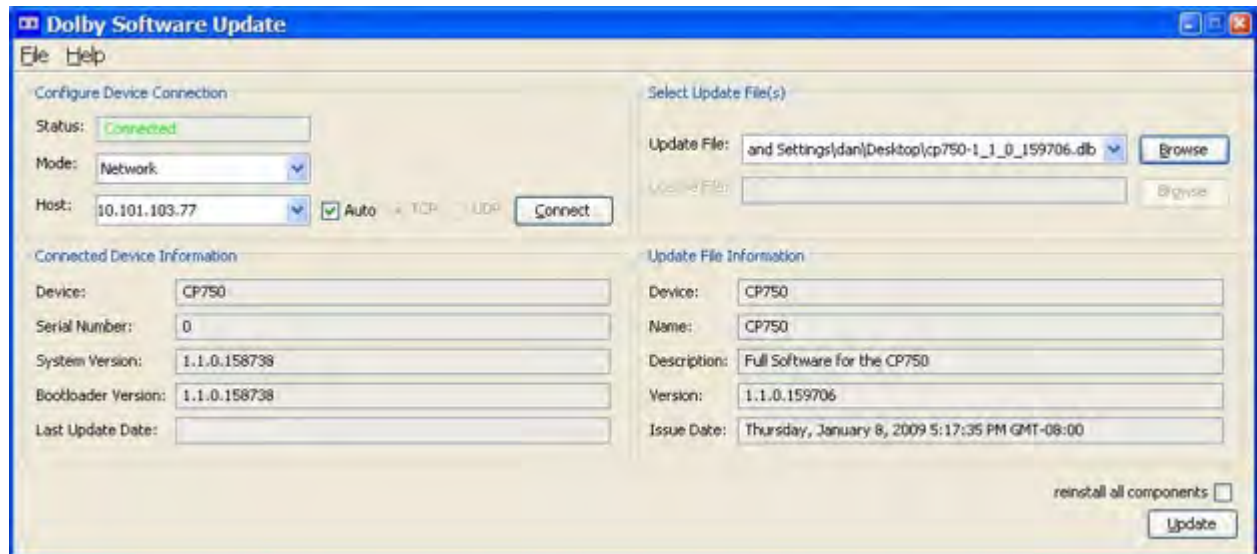
Figure 4-12 Dolby Software Update Screen

5. Click **Browse** to find the .dlb update file on your PC, then click **Open**.

6. Click **Update.**

    After a few seconds, a progress bar displays the status of the update process. When the process is completed, the CP750 automatically reboots with the updated firmware.

    You must close the **Dolby Software Update** window manually.

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Aligning the Auditorium

The CP750 allows you to quickly and easily optimize the sound quality in the auditorium.

The alignment process is discussed in the following sections:

- Checking Theatre Equipment
- Microphone Placement
- Initial Setup
- Calibrating the Internal SPL Meter
- Initial Output-Level Adjustment
- Room Equalization
- Final Output-Level Calibration
- Final Sound Check
- Nonsync Level Adjustment

5.1   Checking Theatre Equipment

Thoroughly check the loudspeakers and power amplifiers for any sources of poor performance, using the checklists below as a guide.

5.1.1   Speakers

- Check loudspeaker cable condition and confirm that the cables are the correct gauge for the impedance of the speakers and the length of the run.
- Check that the speakers are connected to the correct power amp channel.
- Check for leaks in the low-frequency driver cabinet which may sound like rattles.
- Check for loose bolts or other hardware.
- Check the speakers with an ohmmeter. If one channel requires markedly more equalization than the other, or if one speaker overloads at lower levels than the other speakers, an open driver circuit could be the cause. In systems with pairs of drivers, one voice coil of the pair may be open but the system will still function.
- Check for missing drivers or other components.
- Verify that crossover settings matching the type of drivers in use and the acoustics of the theatre. The high-frequency driver level control must be set for the best possible frequency response before you attempt any equalization. This is especially true if the system uses active crossovers with biamp equipment.
- Check for proper polarity between the low- and high-frequency drivers, and between the channels.
- Ensure that the speakers are correctly aimed into the auditorium, and that they are not obstructed by the screen frame, struts, or other objects.

5.1.2 Amplifiers

- Check for distortion.
- Check for gross gain differences among amplifiers. If one amplifier differs in performance from the others, it should be checked and repaired.
- Check for blown fuses.
- Ensure that there is good air movement through power amplifiers.
- Check any air filters.

5.1.3 Air Conditioning

If air-conditioning noise is audible in the theatre, arrange for lubrication of the motor and fan bearings, adjustment of belts and drives, and cleaning of filters to minimize ambient noise.

5.2 Microphone Placement

Position a microphone multiplexer in the center of the auditorium listening area. Place each microphone in the reverberant field rather than in an area that receives the most direct energy from the speakers. In addition, avoid perfect symmetry. Arrange the microphones so that they do not form a square or rectangle parallel to the sides of the room. Take care not to place any of the multiplexing microphones on the auditorium center line. Standing waves and nodes can cause measurement errors.

During final SPL calibration, microphone number 1 should be placed two-thirds of the distance from the front speakers to the rear, at the exact side-to-side center of the room, approximately five feet above the floor level, and rotated 45 degrees upward toward the screen. (Some multiplexer microphones are designed to be pointed directly at the ceiling.) Placement of this microphone is important for output level adjustments.
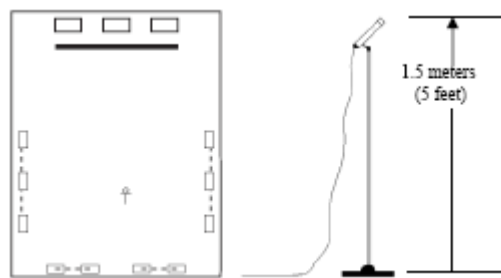
Figure 5-1 Microphone Placement for Equalization

If a single microphone is used, which we do not recommend, use the number 1 position detailed above, but place it slightly off center during equalization.

Route the output cable to the CP750 and connect it to the **Mic. Input** connector on the CP750 rear panel.

> **Note:** Many microphones require phantom power, which can be enabled in the CP750 setup software.

5.3   Initial Setup

Prepare for the alignment process with the following steps:

1. Set all the gain controls on all power amplifiers to known, repeatable settings. The preferred setting for most amplifier gain controls is the maximum. If a different setting is required in order to optimize the noise performance of the system, the controls should be locked in position or marked clearly.

⚠ **Caution:** The following process causes the CP750 to output pink noise to the power amplifiers.
The CP750 output levels may be set too high. If you are unsure of the settings on your unit, turn off the power amplifiers before calibrating SPL. Then, select and observe the present output level adjustment settings.

2. Set up your crossovers if present.
3. Apply power to the CP750.
4. Launch the CP750 Setup Software, connect to the unit, and click **Alignment.**

    The software displays a warning that entering alignment mode will disturb auditorium audio.

5. Click **Continue** in the warning tab that appears to begin the auditorium alignment process.

    The **Room Levels** tab appears active.

Room Levels shows a summary of current settings, allows you to calibrate the internal SPL meter, allows you to choose a channel with which to work, or to adjust any channel's level with a slider. Each increment of the displayed relative number from a value of 1 to 127, represents an increment of approximately 0.25 dB of range adjustment.

Figure 5-2 shows an example of the tab before the SPL is calibrated.

Figure 5-2   Alignment Tab Showing Room Levels

5.4   Calibrating the Internal SPL Meter

You must calibrate the CP750's internal SPL before proceeding with alignment.

1. To start the process, click **C** under **Signal Generator Enable** to activate the Center channel.

2. Select **Pink Noise** from the **Signal Mode** drop-down list. Pink noise is sent to the Center channel speaker.

> **Note:**   The CP750 is shipped from the factory with the **Mic. Input** level control set to the minimum.

3. Check the microphone level to be sure it appears in the target range as shown in Figure 5-2.

    If necessary, adjust the **Mic. Gain** on the rear panel of the CP750 until the level is within the target range.

4. With a sound pressure level meter, measure the noise level in the room. Hold the sound pressure level meter near the location of mic 1, discussed in Section 5.2.

5. Enter the measured value into the **Measured Value** field.

6. Wait while the system automatically calibrates to the room reading.

The calibration is retained in CP750 memory and can be used in future alignments. However, it is advisable to recalibrate the system when rearranging microphones because the sound pressure level varies slightly with microphone placement.

5.5 Initial Output-Level Adjustment

Next, adjust each channel slider to make sure the pink noise is audible and to achieve a reasonable sound pressure level in the auditorium. It is not necessary to set exact levels because the levels will change slightly during equalization. Exact output level adjustment is performed after equalization.

> **Note:** For this and all other adjustments using sliders, use the slider to get close to the optimal value. Use the up and down arrow keys to make fine adjustments.

5.5.1 Setting Main Channel Levels

When the CP750 is first installed, you must repeat these steps for each channel. Values are adjusted on the **Channel Tune** tab after a channel is chosen. Figure 5-3 shows an example with the Center channel selected.

1. Click a channel radio button to make it active and lock pink noise to it.

2. Check the level indicated underneath the **Channel Level** slider, and move it up or down until the measured level reads 85 dB.

3. Repeat steps 1 and 2 for the **R** and **L** channels, setting the **Channel Level** to 85 dB.

4. Repeat steps 1 and 2 for the **Ls**, **Bsl**, **R**, and **Bsr** channels, setting each to read 82 dB.
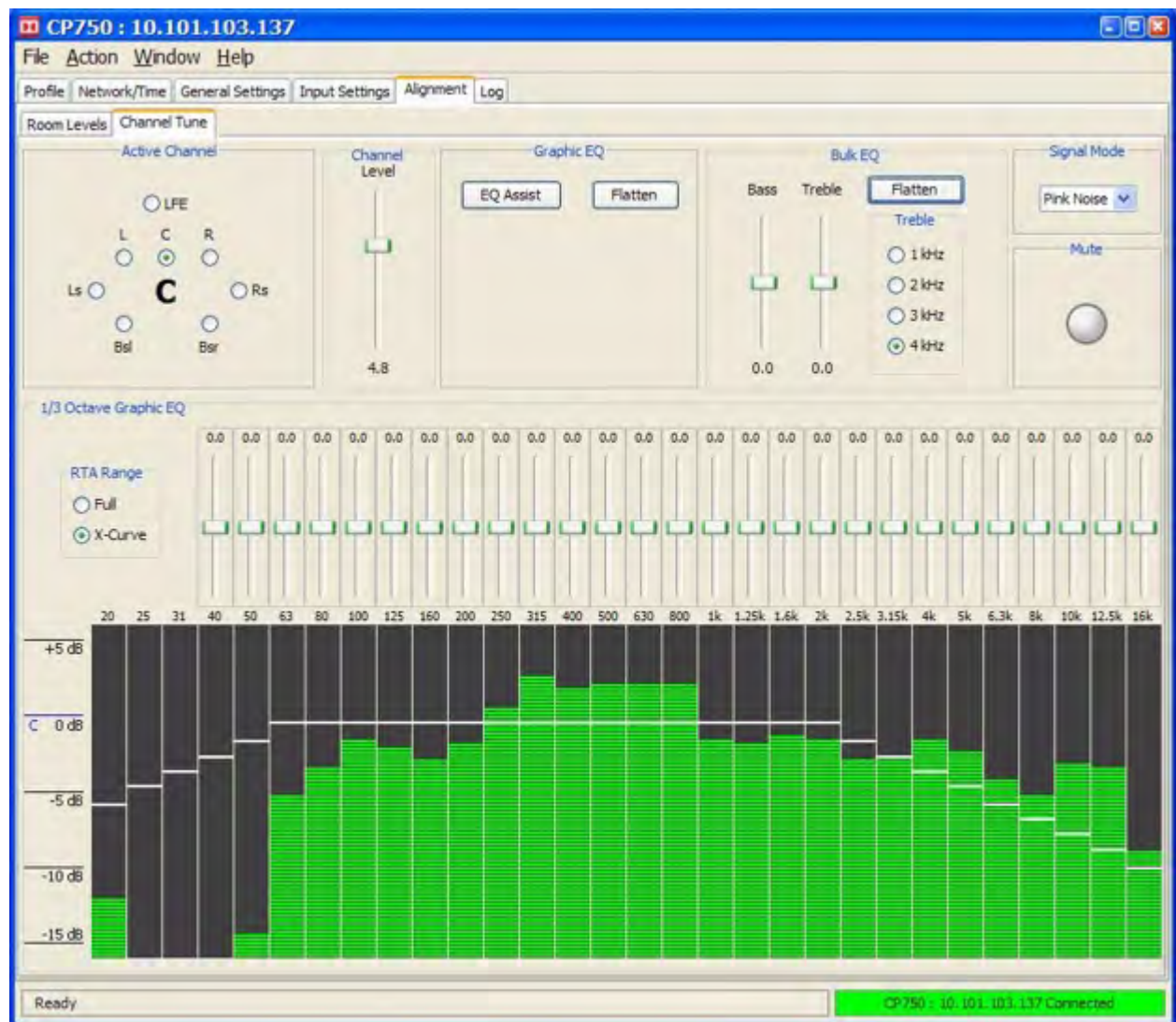
Figure 5-3   Channel Tune Tab Showing the Center Channel

5.5.2   Subwoofer Levels

After the last surround channel is adjusted, click **LFE** to work with it. Pink noise is now present on the Subwoofer channel only (140 Hz bandwidth for EQ and level setting screens).

The LFE has distinct options that appear on the **Channel Tune** tab, as shown in Figure 5-4.
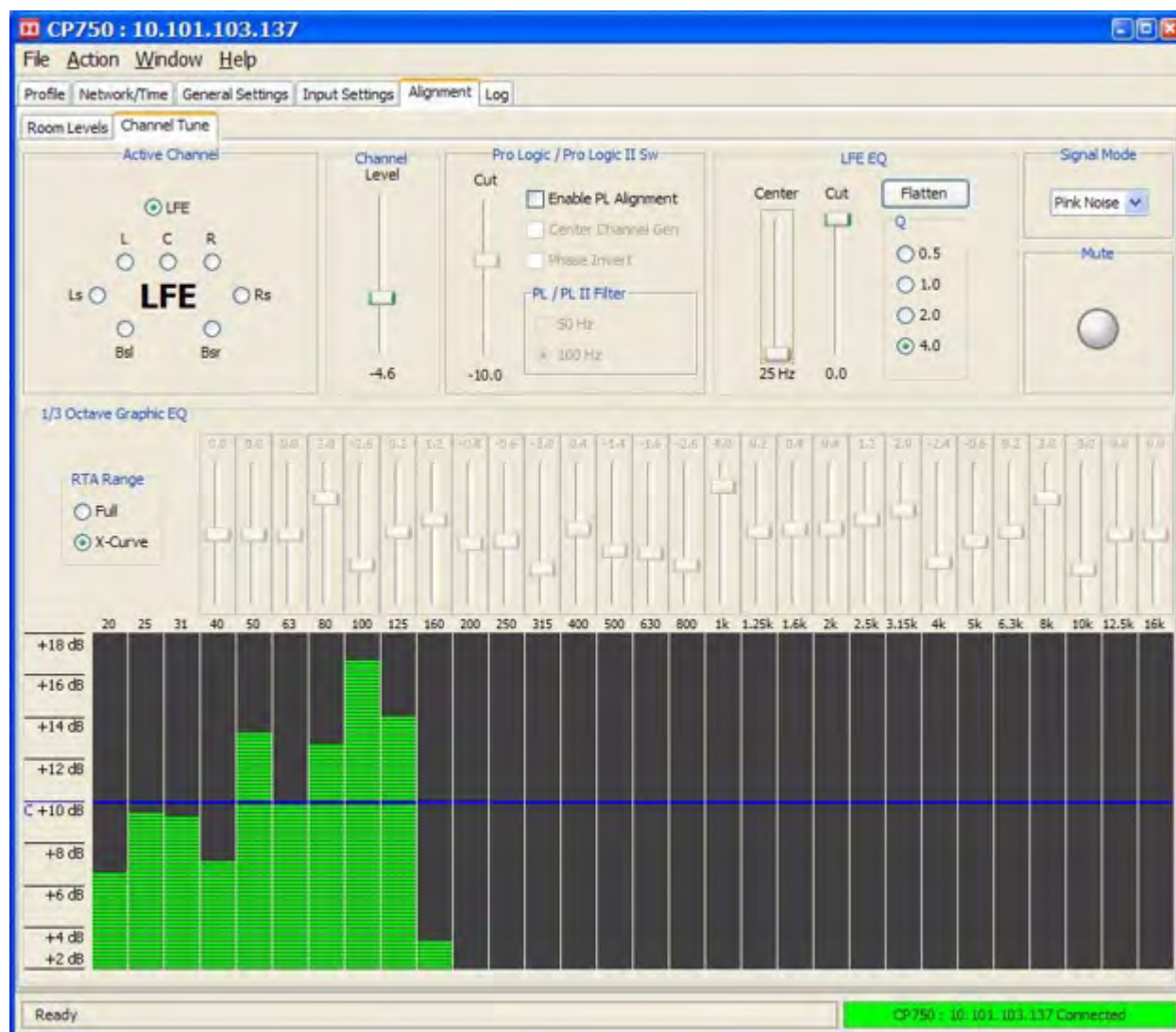
Figure 5-4   Channel Tune Tab Showing LFE EQ

Initial subwoofer level setting uses a blue reference line displayed on the LFE Channel Tune tab, established from the Center channel pink-noise level. Using the **Channel Level** slider, adjust the level, moving the average subwoofer RTA display to match the reference line on the screen as closely as possible. Final subwoofer level adjustments for both digital and Dolby® Pro Logic® signal paths are carried out later, after the room is equalized.

5.6   Room Equalization

Room equalization is performed using the RTA built into the CP750. The desired result is a frequency response that closely matches the "x-curve" overlay (SMPTE 202M-1998). Results achieved within ±3 dB of the x-curve are considered within tolerance of the specification. Small diameter, pressure calibrated microphones are preferred for accuracy over large diameter types. Use of a microphone multiplexer will accommodate spatial

averaging of different positions within the room, which is recommended for best results. Follow this sequence:

1. Perform coarse adjustments of each channel using the **Bulk EQ Bass** and **Treble** sliders.

2. Perform fine adjustments of each band using the 27-band one-third-octave equalizer.

3. Perform LFE channel equalization by setting the frequency, Q (width), and level of cut, using the single-band parametric equalizer.

5.6.1 Setting Bulk EQ

This process simultaneously adjusts all bass or all treble frequencies. It is important to adjust both of these prior to adjusting the individual one-third octave bands.

Bass Level

The **Bass** level on the **Channel Tune** tab is adjustable from –6 to +6 dB in 0.2 dB steps. Using the slider, approximate the reference curve as closely as possible.

Treble Level

The **Treble** level is adjustable from –10 to +10 dB in 0.2 dB steps. Using the slider, approximate the reference curve as closely as possible.

Treble Frequency Corner

The **Treble** corner frequency can be set to 1, 2, 3, or 4 kHz, and applies to all channels. Choose the setting that matches the reference curve most closely.

5.6.2 Using EQ Assist

The **EQ Assist** feature automatically adjusts the frequency response to the x-curve. Use this feature with care since it adjusts adjacent bands as necessary (even to extremes) to achieve the exact x-curve. The **EQ Assist** feature does not adjust to room anomalies as a human operator can, avoiding overcompensation in any frequency bands.

Note: If you use this feature, be sure to use it after adjusting the bass and treble bulk EQ.

To prevent overcompensation for possible speaker problems, the 20, 25, 30, 40, 50, and 63 Hz, as well as the 12.5 and16 kHz, bands are not automatically adjusted. You must adjust these bands manually.

5.6.3 Making Fine Adjustments to Individual Bands

Observe adjacent band effects when adjusting individual frequencies. Be aware of frequency bands that are very different from neighboring bands, and use caution so as not to overcompensate. (Major differences could be the result of a room node at the particular microphone location.) Adjust each frequency band as necessary to achieve a smooth EQ with results nearing the x-curve overlay. The goal is to achieve (or come close to) the

x-curve without overcompensating. Remember that the SMPTE tolerance is ±3 dB, although closer results are often easily achieved.

5.6.4   Adjusting LFE Channel EQ

Begin with zero cut and observe the worst peak within the spectrum. Adjust the **Center** slider until the frequency matches the peak, and then adjust the **Cut** to flatten that region. Adjust the **Q** (width) and **Cut**, until the smoothest response is achieved.

Equalization facilities for the subwoofer channel are different than for the other channels. The process in this manual is designed to correct the principal room resonance in the operating range of the subwoofer. The subwoofer equalizer is a cut-only filter, with adjustable center frequency (25 to 125 Hz), **Q** (center width, selectable among four values), and amount of cut (0 to 12 dB).

After all the full-range channels have been equalized, follow these steps:

1. Click **LFE** to make it the active channel.
2. Using the slider reduce **Cut** to **0 dB**. This disables EQ so that you can determine the low-frequency resonant peak to be equalized. Note the band where the unequalized peak appears.
3. Using the slider increase **Cut** to its maximum, 12 dB.

    Using the **Center** slider moves the dip in the frequency response along the frequency axis of the RTA display.

4. Adjust the center frequency so that the center of the dip is in the same band as the peak displayed in the previous unequalized frequency response.
5. Using the **Cut** slider, slowly reduce the amount of cut to flatten the dip. The center of the dip should be at the same level as the skirts.
6. Click to check other **Q** values for the flattest possible frequency response.

5.7   Final Output-Level Calibration

Once room equalization is complete, the sound pressure level in the theatre can be set accurately.

5.7.1   Main Channels

If a microphone multiplexer is being used in your auditorium, move Mic 1 to room center two-thirds back from the screen.

1. Click the **Room Levels** tab to activate it.
2. Using the sliders, set L, C, R to 85 dB, and the surround channels to 82 dB.

Note: Because the sound pressure level calibration was performed earlier, a recalibration is not required unless the microphone placement has changed. Repeat the steps in Section 5.4 if necessary.

5.7.2   Subwoofer Channel Level

Whereas the final sound pressure levels of the main audio channels are ideally adjusted with a single microphone two-thirds back from screen at room center, the subwoofer channel level is best adjusted with the microphone multiplexer cycling (if available).

1. First complete the center channel equalization and level adjustment.
2. On the **Channel Tune** tab, click **LFE** to make it the active channel and select **Pink Noise** as the **Signal Mode**.
3. Use the slider and arrow keys to achieve an average level of +10 dB as indicated on the spectrum analyzer.

   This is the "digital" level, which is always set 10 dB higher than the center channel.

4. Click **Force PL Cut** to activate the Dolby Pro Logic subwoofer and adjust the **Cut** slider to achieve an average level of 0 dB as indicated on the spectrum analyzer.

   The Pro Logic subwoofer is always set to match the level of the center channel and to act as bass extension during Pro Logic or Pro Logic II playback.

5.7.3   Subwoofer Speaker Polarity Check

To check subwoofer speaker polarity:

1. Click **Center Channel Gen** on the **Channel Tune** tab to generate center-channel pink noise.
2. Choose a **Filter Frequency** to select the crossover point between your main speakers and the LFE.

   Use 50 Hz if your main speakers are full spectrum. Use 100 Hz otherwise.

3. Click **Phase Invert** and watch the behavior of the filter frequency band. There should be a level decrease as soon as you click **Phase Invert**. If you do not see a decrease, the polarity of the subwoofer wiring is incorrect. Reverse the subwoofer speaker wire connections to correct it.

   The subwoofer polarity always resets to normal after completing this check. **Phase Invert** is a temporary setting for this test only.

5.8   Final Sound Check

Follow these steps to do a final equalization check of the auditorium.

1. On the **Room Levels** tab, click **Rotate** under **Signal Generator Enable**.
2. Choose **Signal Mode Pink Noise** to start pink noise.

   Pink noise is sent to each channel in turn, holding for five seconds at each channel.

> **Note:** Unlike the different levels used during alignment, the rotating pink noise is set to 85 dB for all channels during this test. Pressing <Enter> stops the pink noise from moving to the next channel. Pressing <Enter> again resumes pink-noise rotation.

3. Go to the auditorium and sit two-thirds of the distance from the front speakers to the rear, and at the side-to-side center of the room. All channels should sound equally loud and have similar frequency response as the noise rotates. An SPL meter can be used to confirm accurate and equal level settings.

5.9 Nonsync Level Adjustment

You can adjust the Nonsync level on the **Nonsync Input** tab.

1. Click the **Nonsync Input** tab to open it.
2. Play a CD or other audio source on your nonsync device and adjust the slider in the setup software for the desired level in the theatre. If possible, select a recording that has a natural ambience, such as an orchestral work.

5.9.1 Noise Floor Optimization

Noise Floor Optimization calculates and utilizes any available leftover capacity in each channel to improve the overall noise floor of the CP750. It operates by measuring the extent to which the unit uses the available headroom in the B-chain, then boosts the overall gain to use all available headroom. The analog output level trims are then reduced by the amount of that boost, resulting in an optimally reduced noise floor. This adjustment also factors in the headroom available to the fader. Changes to the output trim values are transparent to the user, and no changes will be seen in the fader values in the setup software. Clipping may occur on high level signals if the fader is set above 7.0.

Send Us Your Feedback About This Section

If you have a question or comment about this chapter, send us an email.

Remote Control and Monitoring

The CP750 was designed and built to make remote operation and monitoring easy. It supports three different remote strategies:

- Status Monitoring and Level Control in the Setup Software
- ASCII Control
- SNMP

6.1 Status Monitoring and Level Control in the Setup Software

The virtual status monitor at the bottom of the setup software screens shown in Figure 6-1 provides a user-friendly interface. Its signal-presence meter monitors the CP750 analog output. There is a virtual input selector for each CP750 input. Clicking any of these buttons activates the associated input. Each of the digital input virtual buttons has an associated virtual LED, indicating a valid signal. The software also echoes the state of the front-panel display and fader. Any action available at the unit front panel can be executed through the remote software.

Figure 6-1   Virtual Status Monitor

6.2 ASCII Control

Full control of the CP750 is available through a set of ASCII commands and queries. No error correction (CRC), sync bytes, or protocol is applied to this interface.

6.2.1 Connections

ASCII commands can be communicated over any of three ports:

- The **RS-232** connector supports standard 9-pin serial connections to PC serial ports and other RS-232 devices. It operates at 9600 baud with 8 data bits, 1 stop bit, no parity, and no flow control. It cannot be invoked while the serial data port is in use by the CP750 setup program.

- The **Ethernet** connector supports direct and switched Telnet connections to port 61408.

> **Note:** Note the port number. Telnet programs default to port 23. You must correctly enter 61408 to connect to the CP750.

The system accepts 20 simultaneous connections on the TCP port concurrent with one on each of the other ports. The 21st TCP connection causes the oldest TCP session to disconnect, and sends a warning message to the client.

- The **Remote** RJ-45 connector operates at 9600 bps with 8 data bits, 1 stop bit, no parity, and no flow control.

Characters are not echoed back to the controller, and the **Ethernet** and **Remote** connections do not support terminal control characters such as <Backspace>. The **RS-232** connector does support terminal control characters and is therefore the most user friendly.

6.2.2 Standard and Full Control

Under normal operating conditions, a user needs only a subset of all the available commands. But installers and expert users need and want full control of the system. The standard command set is available when `cp750.ctrl.full_ascii_ctrl` is `0`. The full command set is available when `cp750.ctrl.full_ascii_ctrl` is `1`.

6.2.3 Command Syntax

Command parsing is not case sensitive. White space is ignored on input lines.

Most commands consist of a parameter name followed by a space and a value. `cp750.sys.input_mode dig_2` instructs the system to use digital input 2.

The system responds with status text verifying that the value has been set:
`cp750.sys.input_mode dig_2`

Queries consist of a parameter name followed by a space and a question mark. `cp750.sys.input_mode ?` asks which input the system is currently using.

The system responds with status text for the specified parameter.
`cp750.sys.input_mode dig_2`

If you send an unrecognized value, the system takes no action and returns parameter status. If you send an unrecognized parameter, the system returns a blank new line. No error messages are generated.

There is also a small set of single word commands such as `help`, `status`, and `exit`.

6.2.4   Command Sets

The normal set of commands is listed in Table 6-1. The commands included in the full set are listed in Table 6-2.

Table 6-1   Normal Commands

Parameter Name	Valid Values	Description and Comments
cp750.sysinfo.version	1.0.0.150183	
cp750.ctrl.default_params	0, 1	
cp750.ctrl.fader_delta	−100 to 100	
cp750.ctrl.full_ascii_ctrl	0, 1	
cp750.ctrl.log_erase	0, 1	
cp750.ctrl.reboot	0 to 2147483647	
cp750.sys.analog_global_delay	0 to 250	
cp750.sys.analog_route	[L R C Sw Ls Rs 7 8]	
cp750.sys.dig_1_global_delay	0 to 250	
cp750.sys.dig_1_route	[L R C Sw Ls Rs 7 8]	
cp750.sys.dig_2_global_delay	0 to 250	
cp750.sys.dig_3_global_delay	0 to 250	
cp750.sys.dig_4_global_delay	0 to 250	
p750.sys.dolby_digital_2_channel_decode_mode_1	auto | invalid | lr_discrete | n_a | prologic | prologic_2	
cp750.sys.dolby_digital_2_channel_decode_mode_2	auto | invalid | lr_discrete | n_a | prologic | prologic_2	
cp750.sys.dolby_digital_2_channel_decode_mode_3	auto | invalid | lr_discrete | n_a | prologic | prologic_2	
cp750.sys.dolby_digital_2_channel_decode_mode_4	auto | invalid | lr_discrete | n_a | prologic | prologic_2	
cp750.sys.dolby_digital_dialnorm_1	n_a | off | on	
cp750.sys.dolby_digital_dialnorm_2	n_a | off | on	
cp750.sys.dolby_digital_dialnorm_3	n_a | off | on	
cp750.sys.dolby_digital_dialnorm_4	n_a | off | on	
cp750.sys.fader	0 to 100	
cp750.sys.fader_preset_1	0 to 100	
cp750.sys.fader_preset_1_enable	0, 1	
cp750.sys.fader_preset_2	0 to 100	
cp750.sys.fader_preset_2_enable	0, 1	
cp750.sys.fader_preset_3	0 to 100	
cp750.sys.fader_preset_3_enable	0, 1	
cp750.sys.fader_preset_4	0 to 100	
cp750.sys.fader_preset_4_enable	0, 1	
cp750.sys.fader_preset_a	0 to 100	
cp750.sys.fader_preset_a_enable	0, 1	
cp750.sys.fader_preset_m	0 to 100	
cp750.sys.fader_preset_m_enable	0, 1	
cp750.sys.fader_preset_n	0 to 100	
cp750.sys.fader_preset_n_enable	0, 1	
cp750.sys.input_mode	analog | dig_1 | dig_2 | dig_3 | dig_4 | last | mic | non_sync	
cp750.sys.ip_setting	[ip.ip.ip.ip nm.nm.nm.nm gw.gw.gw.gw off|on hostname]	
cp750.sys.mic_global_delay	0 to 250	

Table 6-1   Normal Commands (Continued)

Parameter Name	Valid Values	Description and Comments
cp750.sys.non_sync_global_delay	0 to 250	
cp750.sys.non_sync_route	[L R]	
cp750.sys.ntp_server	[hostname | ip_address]	
cp750.sys.pcm_2_channel_decode_mode_1	auto | invalid | lr_discrete | n_a | prologic | prologic_2	
cp750.sys.pcm_2_channel_decode_mode_2	auto | invalid | lr_discrete | n_a | prologic | prologic_2	
cp750.sys.pcm_2_channel_decode_mode_3	auto | invalid | lr_discrete | n_a | prologic | prologic_2	
cp750.sys.pcm_2_channel_decode_mode_4	auto | invalid | lr_discrete | n_a | prologic | prologic_2	
cp750.sys.pcm_2_channel_decode_mode_a	auto | invalid | lr_discrete | n_a | prologic | prologic_2	
cp750.sys.pcm_2_channel_decode_mode_n	auto | invalid | lr_discrete | n_a | prologic | prologic_2	
cp750.sys.power_on_input	analog | dig_1 | dig_2 | dig_3 | dig_4 | last | mic | non_sync	
cp750.sys.process_mode_1	minimum_latency | mute | silent_switch	
cp750.sys.process_mode_2	minimum_latency | mute | silent_switch	
cp750.sys.process_mode_3	minimum_latency | mute | silent_switch	
cp750.sys.process_mode_4	minimum_latency | mute | silent_switch	
cp750.sys.subwoofer_filter	50 to 100	
cp750.sys.surround_delay	0 to 150	
cp750.sys.time		
cp750.sys.time_update_int	1 to 60	
cp750.sys_tune.dsp_1		
cp750.sys_tune.dsp_2		
cp750.sys_tune.dsp_3		
cp750.sys_tune.dsp_4		
cp750.sys_tune.dsp_5		
cp750.sys_tune.dsp_6		
cp750.sys_tune.dsp_7		
cp750.sys_tune.dsp_8		
dump_log_100		Prints 100 most recent log events
dump_log		Prints entire log
help		
status		
cp750.<category>.<parameter> ?		Basic query format
exit		

Table 6-2   Full Control Commands

Parameter Name	Valid Values	Description and Comments
cp750.sysinfo.version	1.0.0.150183	
cp750.ctrl.alignment_mode_tickle	0 to 2147483647	
cp750.ctrl.default_params	0, 1	

Table 6-2   Full Control Commands (Continued)

Parameter Name	Valid Values	Description and Comments
cp750.ctrl.fader_delta	−100 to 100	
cp750.ctrl.full_ascii_ctrl	0, 1	
cp750.ctrl.log_erase	0, 1	
cp750.ctrl.reboot	0 to 2147483647	
cp750.internal.save_params	0, 1	
cp750.internal.tecs_set_test_mode	0, 1	
cp750.state.bitstream_format	Dolby_Digital | PCM | n_a	
cp750.state.channel_mode	1_0 | 1_1 | 2_0 | 2_1 | 2_2 | 3_0 | 3_1 | 3_2 | 3_2_L | n_a	
cp750.state.data_rate	112 | 128 | 160 | 192 | 224 | 256 | 32 | 320 | 384 | 40 | 448 | 48 | 512 | 56 | 576 | 64 | 640 | 80 | 96 | n_a	
cp750.state.decode_mode	auto | invalid | lr_discrete | n_a | prologic | prologic_2	
cp750.state.dialnorm	−31 to 0	
cp750.state.dig_1_valid	0, 1	
cp750.state.dig_2_valid	0, 1	
cp750.state.dig_3_valid	0, 1	
cp750.state.dig_4_valid	0, 1	
cp750.state.headless	0, 1	
cp750.state.ip_status		
cp750.state.meters		
cp750.state.rta		
cp750.state.rta_avg	0 to 255	
cp750.state.sample_rate	32 | 44_1 | 48 | 88_2 | 96 | n_a	
cp750.state.spl	−5000 to 5000	
cp750.state.spl_calibrated	0, 1	
cp750.state.spl_stable	0, 1	
cp750.state.time		
cp750.sys.alignment_mode	n_a | off | on	
cp750.sys.analog_global_delay	0 to 250	
cp750.sys.analog_route	[L R C Sw Ls Rs 7 8]	
cp750.sys.analog_text		
cp750.sys.auditorium_number		
cp750.sys.automation_text		
cp750.sys.bass_level_bsl	−60 to 60	
cp750.sys.bass_level_bsr	−60 to 60	
cp750.sys.bass_level_c	−60 to 60	
cp750.sys.bass_level_l	−60 to 60	
cp750.sys.bass_level_ls	−60 to 60	
cp750.sys.bass_level_r	−60 to 60	
cp750.sys.bass_level_rs	−60 to 60	
cp750.sys.cinema_system_text		
cp750.sys.comment_text		
cp750.sys.cp_text		
cp750.sys.dig_1_global_delay	0 to 250	
cp750.sys.dig_1_route	[L R C Sw Ls Rs 7 8]	
cp750.sys.dig_1_text		
cp750.sys.dig_2_global_delay	0 to 250	

Table 6-2   Full Control Commands (Continued)

Parameter Name	Valid Values	Description and Comments
cp750.sys.dig_2_text		
cp750.sys.dig_3_global_delay	0 to 250	
cp750.sys.dig_3_text		
cp750.sys.dig_4_global_delay	0 to 250	
cp750.sys.dig_4_text		
cp750.sys.distance_units	feet | meters	
cp750.sys.dolby_digital_2_channel_decode_mode_1	auto | invalid | lr_discrete | n_a | prologic | prologic_2	
cp750.sys.dolby_digital_2_channel_decode_mode_2	auto | invalid | lr_discrete | n_a | prologic | prologic_2	
cp750.sys.dolby_digital_2_channel_decode_mode_3	auto | invalid | lr_discrete | n_a | prologic | prologic_2	
cp750.sys.dolby_digital_2_channel_decode_mode_4	auto | invalid | lr_discrete | n_a | prologic | prologic_2	
cp750.sys.dolby_digital_dialnorm_1	n_a | off | on	
cp750.sys.dolby_digital_dialnorm_2	n_a | off | on	
cp750.sys.dolby_digital_dialnorm_3	n_a | off | on	
cp750.sys.dolby_digital_dialnorm_4	n_a | off | on	
cp750.sys.eq_bsl_100	−60 to 60	
cp750.sys.eq_bsl_10k	−60 to 60	
cp750.sys.eq_bsl_125	−60 to 60	
cp750.sys.eq_bsl_12_5k	−60 to 60	
cp750.sys.eq_bsl_160	−60 to 60	
cp750.sys.eq_bsl_16k	−60 to 60	
cp750.sys.eq_bsl_1_25k	−60 to 60	
cp750.sys.eq_bsl_1_6k	−60 to 60	
cp750.sys.eq_bsl_1k	−60 to 60	
cp750.sys.eq_bsl_200	−60 to 60	
cp750.sys.eq_bsl_250	−60 to 60	
cp750.sys.eq_bsl_2_5k	−60 to 60	
cp750.sys.eq_bsl_2k	−60 to 60	
cp750.sys.eq_bsl_315	−60 to 60	
cp750.sys.eq_bsl_3_15k	−60 to 60	
cp750.sys.eq_bsl_40	−60 to 60	
cp750.sys.eq_bsl_400	−60 to 60	
cp750.sys.eq_bsl_4k	−60 to 60	
cp750.sys.eq_bsl_50	−60 to 60	
cp750.sys.eq_bsl_500	−60 to 60	
cp750.sys.eq_bsl_5k	−60 to 60	
cp750.sys.eq_bsl_63	−60 to 60	
cp750.sys.eq_bsl_630	−60 to 60	
cp750.sys.eq_bsl_6_3k	−60 to 60	
cp750.sys.eq_bsl_80	−60 to 60	
cp750.sys.eq_bsl_800	−60 to 60	
cp750.sys.eq_bsl_8k	−60 to 60	
cp750.sys.eq_bsr_100	−60 to 60	
cp750.sys.eq_bsr_10k	−60 to 60	
cp750.sys.eq_bsr_125	−60 to 60	
cp750.sys.eq_bsr_12_5k	−60 to 60	
cp750.sys.eq_bsr_160	−60 to 60	

Table 6-2   Full Control Commands (Continued)

Parameter Name	Valid Values	Description and Comments
cp750.sys.eq_bsr_16k	–60 to 60	
cp750.sys.eq_bsr_1_25k	–60 to 60	
cp750.sys.eq_bsr_1_6k	–60 to 60	
cp750.sys.eq_bsr_1k	–60 to 60	
cp750.sys.eq_bsr_200	–60 to 60	
cp750.sys.eq_bsr_250	–60 to 60	
cp750.sys.eq_bsr_2_5k	–60 to 60	
cp750.sys.eq_bsr_2k	–60 to 60	
cp750.sys.eq_bsr_315	–60 to 60	
cp750.sys.eq_bsr_3_15k	–60 to 60	
cp750.sys.eq_bsr_40	–60 to 60	
cp750.sys.eq_bsr_400	–60 to 60	
cp750.sys.eq_bsr_4k	–60 to 60	
cp750.sys.eq_bsr_50	–60 to 60	
cp750.sys.eq_bsr_500	–60 to 60	
cp750.sys.eq_bsr_5k	–60 to 60	
cp750.sys.eq_bsr_63	–60 to 60	
cp750.sys.eq_bsr_630	–60 to 60	
cp750.sys.eq_bsr_6_3k	–60 to 60	
cp750.sys.eq_bsr_80	–60 to 60	
cp750.sys.eq_bsr_800	–60 to 60	
cp750.sys.eq_bsr_8k	–60 to 60	
cp750.sys.eq_c_100	–60 to 60	
cp750.sys.eq_c_10k	–60 to 60	
cp750.sys.eq_c_125	–60 to 60	
cp750.sys.eq_c_12_5k	–60 to 60	
cp750.sys.eq_c_160	–60 to 60	
cp750.sys.eq_c_16k	–60 to 60	
cp750.sys.eq_c_1_25k	–60 to 60	
cp750.sys.eq_c_1_6k	–60 to 60	
cp750.sys.eq_c_1k	–60 to 60	
cp750.sys.eq_c_200	–60 to 60	
cp750.sys.eq_c_250	–60 to 60	
cp750.sys.eq_c_2_5k	–60 to 60	
cp750.sys.eq_c_2k	–60 to 60	
cp750.sys.eq_c_315	–60 to 60	
cp750.sys.eq_c_3_15k	–60 to 60	
cp750.sys.eq_c_40	–60 to 60	
cp750.sys.eq_c_400	–60 to 60	
cp750.sys.eq_c_4k	–60 to 60	
cp750.sys.eq_c_50	–60 to 60	
cp750.sys.eq_c_500	–60 to 60	
cp750.sys.eq_c_5k	–60 to 60	
cp750.sys.eq_c_63	–60 to 60	
cp750.sys.eq_c_630	–60 to 60	
cp750.sys.eq_c_6_3k	–60 to 60	
cp750.sys.eq_c_80	–60 to 60	
cp750.sys.eq_c_800	–60 to 60	
cp750.sys.eq_c_8k	–60 to 60	

Table 6-2   Full Control Commands (Continued)

Parameter Name	Valid Values	Description and Comments
cp750.sys.eq_l_100	−60 to 60	
cp750.sys.eq_l_10k	−60 to 60	
cp750.sys.eq_l_125	−60 to 60	
cp750.sys.eq_l_12_5k	−60 to 60	
cp750.sys.eq_l_160	−60 to 60	
cp750.sys.eq_l_16k	−60 to 60	
cp750.sys.eq_l_1_25k	−60 to 60	
cp750.sys.eq_l_1_6k	−60 to 60	
cp750.sys.eq_l_1k	−60 to 60	
cp750.sys.eq_l_200	−60 to 60	
cp750.sys.eq_l_250	−60 to 60	
cp750.sys.eq_l_2_5k	−60 to 60	
cp750.sys.eq_l_2k	−60 to 60	
cp750.sys.eq_l_315	−60 to 60	
cp750.sys.eq_l_3_15k	−60 to 60	
cp750.sys.eq_l_40	−60 to 60	
cp750.sys.eq_l_400	−60 to 60	
cp750.sys.eq_l_4k	−60 to 60	
cp750.sys.eq_l_50	−60 to 60	
cp750.sys.eq_l_500	−60 to 60	
cp750.sys.eq_l_5k	−60 to 60	
cp750.sys.eq_l_63	−60 to 60	
cp750.sys.eq_l_630	−60 to 60	
cp750.sys.eq_l_6_3k	− 60 to 60	
cp750.sys.eq_l_80	−60 to 60	
cp750.sys.eq_l_800	−60 to 60	
cp750.sys.eq_l_8k	−60 to 60	
cp750.sys.eq_lfe_cut	−126 to 0	
cp750.sys.eq_lfe_freq	25 to 125	
cp750.sys.eq_lfe_q	0_5 | 1_0 | 2_0 | 4_0	
cp750.sys.eq_ls_100	−60 to 60	
cp750.sys.eq_ls_10k	−60 to 60	
cp750.sys.eq_ls_125	−60 to 60	
cp750.sys.eq_ls_12_5k	−60 to 60	
cp750.sys.eq_ls_160	−60 to 60	
cp750.sys.eq_ls_16k	−60 to 60	
cp750.sys.eq_ls_1_25k	−60 to 60	
cp750.sys.eq_ls_1_6k	−60 to 60	
cp750.sys.eq_ls_1k	−60 to 60	
cp750.sys.eq_ls_200	−60 to 60	
cp750.sys.eq_ls_250	−60 to 60	
cp750.sys.eq_ls_2_5k	−60 to 60	
cp750.sys.eq_ls_2k	−60 to 60	
cp750.sys.eq_ls_315	−60 to 60	
cp750.sys.eq_ls_3_15k	−60 to 60	
cp750.sys.eq_ls_40	−60 to 60	
cp750.sys.eq_ls_400	−60 to 60	
cp750.sys.eq_ls_4k	−60 to 60	
cp750.sys.eq_ls_50	−60 to 60	

Table 6-2   Full Control Commands (Continued)

Parameter Name	Valid Values	Description and Comments
cp750.sys.eq_ls_500	−60 to 60	
cp750.sys.eq_ls_5k	−60 to 60	
cp750.sys.eq_ls_63	−60 to 60	
cp750.sys.eq_ls_630	−60 to 60	
cp750.sys.eq_ls_6_3k	−60 to 60	
cp750.sys.eq_ls_80	−60 to 60	
cp750.sys.eq_ls_800	−60 to 60	
cp750.sys.eq_ls_8k	−60 to 60	
cp750.sys.eq_r_100	−60 to 60	
cp750.sys.eq_r_10k	−60 to 60	
cp750.sys.eq_r_125	−60 to 60	
cp750.sys.eq_r_12_5k	−60 to 60	
cp750.sys.eq_r_160	−60 to 60	
cp750.sys.eq_r_16k	−60 to 60	
cp750.sys.eq_r_1_25k	−60 to 60	
cp750.sys.eq_r_1_6k	−60 to 60	
cp750.sys.eq_r_1k	−60 to 60	
cp750.sys.eq_r_200	−60 to 60	
cp750.sys.eq_r_250	−60 to 60	
cp750.sys.eq_r_2_5k	−60 to 60	
cp750.sys.eq_r_2k	−60 to 60	
cp750.sys.eq_r_315	−60 to 60	
cp750.sys.eq_r_3_15k	−60 to 60	
cp750.sys.eq_r_40	−60 to 60	
cp750.sys.eq_r_400	−60 to 60	
cp750.sys.eq_r_4k	−60 to 60	
cp750.sys.eq_r_50	−60 to 60	
cp750.sys.eq_r_500	−60 to 60	
cp750.sys.eq_r_5k	−60 to 60	
cp750.sys.eq_r_63	−60 to 60	
cp750.sys.eq_r_630	−60 to 60	
cp750.sys.eq_r_6_3k	−60 to 60	
cp750.sys.eq_r_80	−60 to 60	
cp750.sys.eq_r_800	−60 to 60	
cp750.sys.eq_r_8k	−60 to 60	
cp750.sys.eq_rs_100	−60 to 60	
cp750.sys.eq_rs_10k	−60 to 60	
cp750.sys.eq_rs_125	−60 to 60	
cp750.sys.eq_rs_12_5k	−60 to 60	
cp750.sys.eq_rs_160	−60 to 60	
cp750.sys.eq_rs_16k	−60 to 60	
cp750.sys.eq_rs_1_25k	−60 to 60	
cp750.sys.eq_rs_1_6k	−60 to 60	
cp750.sys.eq_rs_1k	−60 to 60	
cp750.sys.eq_rs_200	−60 to 60	
cp750.sys.eq_rs_250	−60 to 60	
cp750.sys.eq_rs_2_5k	−60 to 60	
cp750.sys.eq_rs_2k	−60 to 60	
cp750.sys.eq_rs_315	−60 to 60	

Table 6-2   Full Control Commands (Continued)

Parameter Name	Valid Values	Description and Comments
cp750.sys.eq_rs_3_15k	–60 to 60	
cp750.sys.eq_rs_40	–60 to 60	
cp750.sys.eq_rs_400	–60 to 60	
p750.sys.eq_rs_4k	–60 to 60	
cp750.sys.eq_rs_50	–60 to 60	
cp750.sys.eq_rs_500	–60 to 60	
cp750.sys.eq_rs_5k	–60 to 60	
cp750.sys.eq_rs_63	–60 to 60	
cp750.sys.eq_rs_630	–60 to 60	
cp750.sys.eq_rs_6_3k	–60 to 60	
cp750.sys.eq_rs_80	–60 to 60	
cp750.sys.eq_rs_800	–60 to 60	
cp750.sys.eq_rs_8k	–60 to 60	
cp750.sys.fader	0 to 100	
cp750.sys.fader_preset_1	0 to 100	
cp750.sys.fader_preset_1_enable	0, 1	
cp750.sys.fader_preset_2	0 to 100	
cp750.sys.fader_preset_2_enable	0, 1	
cp750.sys.fader_preset_3	0 to 100	
cp750.sys.fader_preset_3_enable	0, 1	
cp750.sys.fader_preset_4	0 to 100	
cp750.sys.fader_preset_4_enable	0, 1	
cp750.sys.fader_preset_a	0 to 100	
cp750.sys.fader_preset_a_enable	0, 1	
cp750.sys.fader_preset_m	0 to 100	
cp750.sys.fader_preset_m_enable	0, 1	
cp750.sys.fader_preset_n	0 to 100	
cp750.sys.fader_preset_n_enable	0, 1	
cp750.sys.input_mode	analog | dig_1 | dig_2 | dig_3 | dig_4 | last | mic | non_sync	
cp750.sys.ip_setting	[ip.ip.ip.ip nm.nm.nm.nm gw.gw.gw.gw off | on hostname]	
cp750.sys.lcd_contrast	0 to 31	
cp750.sys.level_bsl	–160 to 160	
cp750.sys.level_bsr	–160 to 160	
cp750.sys.level_c	–160 to 160	
cp750.sys.level_l	–160 to 160	
cp750.sys.level_lfe	–160 to 160	
cp750.sys.level_ls	–160 to 160	
cp750.sys.level_r	–160 to 160	
cp750.sys.level_rs	–160 to 160	
cp750.sys.mic_global_delay	0 to 250	
cp750.sys.mic_text		
cp750.sys.mute	0, 1	
cp750.sys.mute_fade_in_time	200 to 5000	
cp750.sys.mute_fade_out_time	200 to 5000	
cp750.sys.non_sync_global_delay	0 to 250	
cp750.sys.non_sync_route	[L R]	
cp750.sys.non_sync_text		

Table 6-2   Full Control Commands (Continued)

Parameter Name	Valid Values	Description and Comments
cp750.sys.ntp_server	[hostname ǀ ip_address]	
cp750.sys.pcm_2_channel_decode_mode_1	auto ǀ invalid ǀ lr_discrete ǀ n_a ǀ prologic ǀ prologic_2	
cp750.sys.pcm_2_channel_decode_mode_2	auto ǀ invalid ǀ lr_discrete ǀ n_a ǀ prologic ǀprologic_2	
cp750.sys.pcm_2_channel_decode_mode_3	auto ǀ invalid ǀ lr_discrete ǀ n_a ǀ prologic ǀ prologic_2	
cp750.sys.pcm_2_channel_decode_mode_4	auto ǀ invalid ǀ lr_discrete ǀ n_a ǀ prologic ǀ prologic_2	
cp750.sys.pcm_2_channel_decode_mode_a	auto ǀ invalid ǀ lr_discrete ǀ n_a ǀ prologic ǀ prologic_2	
cp750.sys.pcm_2_channel_decode_mode_n	auto ǀ invalid ǀ lr_discrete ǀ n_a ǀ prologic ǀ prologic_2	
cp750.sys.power_on_input	analog ǀ dig_1 ǀ dig_2 ǀ dig_3 ǀ dig_4 ǀ last ǀ mic ǀ non_sync	
cp750.sys.process_mode_1	minimum_latency ǀ mute ǀ silent_switch	
cp750.sys.process_mode_2	minimum_latency ǀ mute ǀ silent_switch	
cp750.sys.process_mode_3	minimum_latency ǀ mute ǀ silent_switch	
cp750.sys.process_mode_4	minimum_latency ǀ mute ǀ silent_switch	
cp750.sys.projector_text		
cp750.sys.rta_channel	Bsl ǀ Bsr ǀ C ǀ L ǀ LFE ǀ Ls ǀ R ǀ Rs	
cp750.sys.screen_distance	0 to 2147483647	
cp750.sys.serial_number	0 to 2147483647	
cp750.sys.signal_gen_channel	Bsl ǀ Bsr ǀ C ǀ L ǀ LFE ǀ Ls ǀ R ǀ Rs	
cp750.sys.signal_gen_mode	off ǀ pink ǀ program ǀ sine_100 ǀ sine_10k ǀ sine_1k ǀ thump	
cp750.sys.speaker_distance	0 to 2147483647	
cp750.sys.spl_room	−5000 to 5000	
cp750.sys.subwoofer_filter: 50 to 100		
cp750.sys.surround_delay	0 to 150	
cp750.sys.theater_name		
cp750.sys.time		
cp750.sys.time_update_int	1 to 60	
cp750.sys.treble_freq_bsl	1 to 4	
cp750.sys.treble_freq_bsr	1 to 4	
cp750.sys.treble_freq_c	1 to 4	
cp750.sys.treble_freq_l	1 to 4	
cp750.sys.treble_freq_ls	1 to 4	
cp750.sys.treble_freq_r	1 to 4	
cp750.sys.treble_freq_rs	1 to 4	
cp750.sys.treble_level_bsl	−120 to 120	
cp750.sys.treble_level_bsr	−120 to 120	
cp750.sys.treble_level_c	−120 to 120	
cp750.sys.treble_level_l	−120 to 120	
cp750.sys.treble_level_ls	−120 to 120	

Table 6-2 Full Control Commands (Continued)

Parameter Name	Valid Values	Description and Comments
cp750.sys.treble_level_r	–120 to 120	
cp750.sys.treble_level_rs	–120 to 120	
cp750.sys.velocity_helper	0, 1	
cp750.sys_tune.dsp_1		
cp750.sys_tune.dsp_2		
cp750.sys_tune.dsp_3		
cp750.sys_tune.dsp_4		
cp750.sys_tune.dsp_5		
cp750.sys_tune.dsp_6		
cp750.sys_tune.dsp_7 :		
cp750.sys_tune.dsp_8		
cp750.sys_tune.dsp_boot_delay_us	0 to 2147483647	
cp750.sys_tune.dsp_fade_time_ms	0 to 2147483647	
cp750.sys_tune.log_interval	1 to 60000	
cp750.sys_tune.meter_rate	0 to 30	
cp750.sys_tune.rta_rate	0 to 30	
cp750.sys_tune.upgrade_timeout	120 to 1800	
cp750.sys_tune.usb_cycle_time: 1 to 30		
cp750.sysinfo.ethernet_address		
cp750.sysinfo.hardware_rev	0 to 16	
cp750.sysinfo.parameter_file_version		
dump_log_100		Prints most recent 100 log events
dump_log		Prints entire log
help		Lists commands and valid values
status		Lists current unit state
cp750.<category>.<parameter> ?		Basic query format
exit		

6.3   SNMP

The CP750 runs an SNMP agent that communicates over the Ethernet connector in the rear panel.

The CP750 supports a wide variety of standard MIBs listed in Table 6-3, Table 6-4, and Table 6-5. In cases where the CP750 does not support the entire MIB, the supported sections are indicated by title in the tables.

Table 6-3 Supported MIB-2 MIBS

RFC	Supported Sections
RFC 1213 (3418?)	System group
RFC 4293	IP-MIB scalars, ipAddressPrefix table, ipAddressTable, ipNetToPhysical table, ipNetToMedia table, ipSystemStatsTable, ipIfStatsTable, ipDefaultRouterTable, ipv4InterfaceTable, ipv6InterfaceTable, ipv6ScopeZoneIndexTable, ipv6RouterAdvertTable, icmpStatsTable, icmpMsgStatsTable
RFC 2683	IF-MIB scalars, ifTable, ifXTable
RFC 4022	TCP-MIB scalars, tcpConnection table, tcpListener table
RFC 4113	UDP-MIB scalars, udpEndpoint table

Table 6-4   Other Standard MIBs

RFC	Supported Sections
RFC2006	MIP-MIB, faRegistration group
RFC 4292	IP-FORWARD-MIB ipForward, inetCidrRoutNumber, inetCidrRouteDiscards, inetCidrRoute table

Table 6-5   V3 MIBS

RFC 3411	SNMP-FRAMEWORK MIB
RFC 3412	SNMP-MPD-MIB
RFC 3413	SNMP-TARGET-MIB, SNMP-NOTIFICATION-MIB, SNMP-PROXY-MIB
RFC 3414	USM-MIB
RFC 2786	USM-DH-OBJECTS-MIB
RFC 3415	VACM-MIB
RFC 3417	SNMPv2-TM mib
RFC 3584	SNMP-COMMUNITY-MIB

In addition, the CP750 supports local SNMP variables, listed in the DOLBY-CP750-MIB.

All Dolby® MIBs are available on the *Dolby Digital Cinema Resources CD*, and from sales representatives and technicians.

Send Us Your Feedback About This Section

If you have a question or comment about this chapter, send us an email.

Technical Reference

7.1   CP750 Specifications

7.1.1   Audio Inputs

Digital Input 1

4xAES, 25-pin female D-connector provides four AES/EBU channel pair inputs
Input impedance: 110 Ω balanced. The four AES input signals must be time aligned with each other.

Digital Input 2, Digital Input 3

1xAES, male BNC connector, unbalanced but floating, per AES-3id-1995/SMPTE 276M
Input impedance: 75 Ω

Digital Input 4

Optical Toslink™ connector for digital input

Multichannel Analog Input

Eight-channel, balanced analog, 10 kΩ differential input impedance, 300 mV reference level 25-pin female D-connector

NonSync Input

Two-channel, RCA connector, 21 kΩ input impedance, adjustable input level

Microphone Input

XLR connector, standard pinout, 10 kΩ differential input impedance, 12 V phantom power available, adjustable gain

7.1.2   Audio Outputs

Main Audio Output

Eight-channel, balanced analog, 100 Ω differential output impedance, 25-pin male D-connector

Do not load with less than 600 Ω differential.

Aux Output

Two-channel, unbalanced analog, 200 mV reference level, 100 Ω output impedance, RCA connectors, always routes channel pair 7/8 of 4xAES input for alternate uses such as H/I & VI-N transmitters.

Note: This fixed level output has no EQ and is not controlled by either the fader or mute controls.

H/I Output

1 channel, unbalanced analog, 70 mV fixed reference level, 100 Ω output impedance, RCA connector, center-weighted sum of Left, Center, Right

7.1.3 Other Input/Output

Ethernet Port

RJ-45 for network connection and PC setup software

Automation Port

25-pin female D-connector, floating ground

RS-232 Port

9-pin female D-connector

Remote Port

RJ-45 connector for optional Cat. No. 868 Remote Fader (not an Ethernet connection)

Backup Power Connector

For optional Cat. No. 994 External Power Supply

AC Mains Input

Unswitched IEC power inlet module

USB Port

For connection to PC to run setup software

7.1.4 Audio Processing

PCM

32, 44.1, 48, and 96kHz; 16-, 20-, 24-bit

Dolby Digital (AC-3)

Up to 5.1 channels

Dolby Pro Logic

Left, Center, Right, Surround (Subwoofer optional)

Dolby Pro Logic II

Left, Center, Right, Left surround, Right surround (Subwoofer optional)

Dolby Surround EX

Left, Center, Right, Left surround, Back surround, Right surround, Subwoofer

Nonsync

Left, Right, Surround (Subwoofer optional)

7.1.5 Other Parameters

Global Audio Delay

Adjustable delay of all channels from 0–250 ms; each input may be adjusted separately

Surround Delay

Digital Surround delay, 0–150 ms

Dolby® Pro Logic® Surround delay, 20–150 ms

Equalization

Eight-channel one-third-octave plus parametric for Subwoofer channel

Dynamic Range

105 dB clip to CCIR/AMR weighted typical without noise optimizer enabled

Distortion

<0.005 percent, 4×AES input-to-analog output

7.1.6   Optional Accessories Ordered Separately

Cat. No. 994 Backup Power Supply

Cat. No. 868 Remote Fader

CP750-CK Connector Kit

7.1.7   Power Requirements

100–240 VAC, 50–60 Hz

7.1.8   Construction

2-U rackmount chassis frame

7.1.9   Dimensions and Weight

Width 17 in (432 mm)

Height 3.5 in (89 mm)

Overall depth, including connectors and fader knob: 10.6 in (269 mm)

Depth behind rack ears, including connectors: 9.75 in (248 mm)

Weight: 9.4 lb (4.2 kg)

7.1.10   PC Connection

USB port for setup operations and software upgrades

7.1.11   Input Selector Buttons

Four digital input source buttons
Eight-channel analog input
Nonsync input
Mic input

7.1.12   Indicators

Valid LEDs indicate digital input clock presence for each digital input
LCD front-panel indicates PCM or Dolby Digital processing
Pro Logic II, Pro Logic, or Discrete decode modes indicated by LCD text

7.1.13   Environmental Conditions

Operating: 0°C to 40°C (32°F to 104°F)
Nonoperating (storage): 0°C to 85°C (32°F to 185°F)
Humidity: 20 to 80 percent relative, noncondensing

7.1.14 Regulatory Notices

North America: This unit complies with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules, and Industry Canada ICES-003 specifications. It is UL Listed for both US and Canada.

Europe: This unit complies with the requirements of Low Voltage Directive 2006/95/EC and EMC Directive 2004/108/EC and carries the CE marking accordingly.

Warranty

One-year limited, parts and labor. Specifications subject to change without notice.

7.2 Rear-Panel Connector Descriptions and Types

All connectors with non-standard pinouts are described in this section.

Table 7-1 Rear-Panel Connector Descriptions and Types

Panel Label	Description	Type
BACKUP POWER	4-pin XLR for connecting the Cat. No. 994 back up power supply	XLR F
RS-232	For ASCII command string automation control	DB-9 F
Ethernet	For connection to the auditorium network	RJ-45
REMOTE	For connection to Cat. No. 868 Remote Fader	RJ-45
4xAES IN	4 x AES/EBU input (eight-channel PCM audio)	DB-25 F
AUTOMATION	For theatre automation control input (momentary contact)	DB-25 F
MAIN AUDIO OUTPUT	Eight-channel balanced floating analog output: L, C, R, Ls, Rs, Sw, 7, 8	DB-25 M
MIC. INPUT	3-pin, female XLR connector	XLR F
MULTI-CHANNEL ANALOG INPUT	Eight-channel balanced floating analog input for external processor, such as a Dolby DA20	DB-25 F

7.2.1 Backup Power Connector
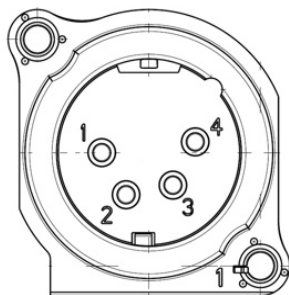
Figure 7-1 Backup Power Connector Detail

Table 7-2 Backup Power Connector Pinout

XLR Pin	Connection
1	+15 V input
2	+5 V input
3	Ground
4	–15 V input
5 (Shell)	Ground

7.2.2   RS-232 Serial Port

9600 baud, no parity, 1 stop bit

Table 7-3 Serial Port Pinout

Pin	Connection
1	No connection
2	Data out (TXD)
3	Data in (RXD)
4	Connected to pin 6
5	Chassis ground
6	Connected to pin 4
7	Connected to pin 8
8	Connected to pin 7
9	No connection

7.2.3   Remote Fader Connector
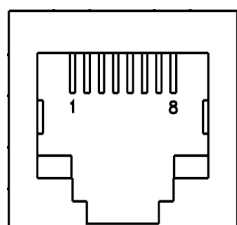
Figure 7-2 Cat. No. 868 Remote Fader Connector Detail

Table 7-4 Remote Fader Connector Pinout

RJ-45 Pin	Fader Connection
1	TX+
2	TX–
3	RX+
4	+15 V
5	No connection
6	RX–
7	Ground
8	No connection

7.2.4   4xAES IN Connector

This is a female 25-pin D-connector.

Table 7-5   4xAES IN Connector Pinout

25-Pin D-Connector	Connection
1	AES common
2	CH1/2 –
3	CH3/4 +
4	AES common
5	CH5/6 –
6	CH7/8 +
7	AES common
8	No connection
9	AES common
10	No connection
11	No connection
12	AES common
13	No connection
14	CH1/2 +
15	AES common
16	CH3/4 –
17	CH5/6 +
18	AES common
19	CH7/8 –
20	AES common
21	No connection
22	No connection
23	AES common
24	No connection
25	No connection

7.2.5   Automation Connector

This is a female 25-pin D-connector.

To assert a CTRLx pin, connect it to pin 12.

All output voltages and current are respect to pin 12.

Table 7-6   Automation Connector Pinout

DB-25 Pin	Connection	Description
1	CTRL0 – Automation Read	Digital 1 button
2	CTRL1 – Automation Read	Digital 2 button
3	CTRL2 – Automation Read	Digital 3 button
4	CTRL3 – Automation Read	Digital 4 button
5	CTRL4 – Automation Read	Multichannel Analog button
6	CTRL5 – Automation Read	Nonsync button
7	CTRL6 – Automation Read	Microphone button
8	CTRL7 – Automation Read	Unused
9	No connection	
10	Mute command	Input
11	No connection	
12	Return (for all Automation functions as well as Automaton Power)	
13	Automation Power Output (+5v at a maximum of 50 mA.)	Input
14	ID0 – Tally Output	Digital 1 LED
15	ID1 – Tally Output	Digital 2 LED
16	ID2 – Tally Output	Digital 3 LED
17	ID3 – Tally Output	Digital 4 LED
18	ID4 – Tally Output	Multichannel Analog LED
19	ID5 – Tally Output	Nonsync LED
20	ID6 – Tally Output	Microphone LED
21	ID7 – Tally Output	Unused
22	No connection	
23	Mute indicator (Low = muted)	Output
24	No connection	
25	No connection	

7.2.6   Mic. Input Connector

This is a 3-pin female XLR connector.
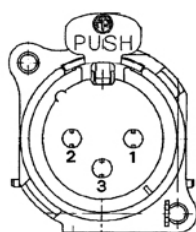
Figure 7-3   Mic. Input Connector Detail

Table 7-7   Mic. Input Connector Pinout

XLR Pin	Signal
1	Shield
2	+ Signal
3	– Signal

7.2.7   Main Audio Output and Multi-Channel Input Connectors

The pinout is the same for both these connectors, as shown in Table 7-8. The **MAIN AUDIO OUTPUT** connector is male, pin 1 is at the upper left. The **MULTI-CHANNEL AUDIO INPUT** connector is female, pin 1 is at the upper right.

Table 7-8   Main Audio Output and Multi-Channel Audio Input Connector Pinout

DB-25 Pin	Signal Name
1	Chassis
2	L+
3	Le–
4	Chassis
5	C+
6	Re–
7	Chassis
8	R+
9	Chassis
10	Ls–
11	Rs–
12	SW–
13	Chassis
14	L–
15	Chassis
16	Le+
17	C–
18	Chassis
19	Re+
20	R–
21	Chassis
22	Chassis
23	Ls+
24	Rs+
25	SW+

7.2.8   RS-232 ASCII String Commands

Table 7-9   ASCII String Commands

CP750 ASCII String	Parameter or Action
CP750.sys.dig_1_global_delay	0–250
CP750.sys.dig_2_global_delay	0–250
CP750.sys.dig_3_global_delay	0–250
CP750.sys.dig_4_global_delay	0–250
CP750.sys.dolby_digital_2_channel_decode_mode	auto | lr_discrete | prologic | prologic_2
CP750.sys.dolby_digital_dialnorm	off | on
CP750.sys.dolby_e_2_channel_decode_mode	auto | lr_discrete | prologic | prologic_2
CP750.sys.dolby_e_dialnorm	off | on
CP750.sys.dolby_e_program	1–4
CP750.sys.input_mode	dig_1 | dig_2 | dig_3 | dig_4 | film
CP750.sys.ip_setting	[ip.ip.ip.ip nm.nm.nm.nm gw.gw.gw.gw off|on hostname]
CP750.sys.ntp_server	[hostname | ip_address]
CP750.sys.pcm_2_channel_decode_mode	lr_discrete | prologic | prologic_2
CP750.sys.pcm_mute	off | on
CP750.sys.pcm_route_1	C | L | LFE | Le | Ls | R | Re | Rs
CP750.sys.pcm_route_2	C | L | LFE | Le | Ls | R | Re | Rs
CP750.sys.pcm_route_3	C | L | LFE | Le | Ls | R | Re | Rs
CP750.sys.pcm_route_4	C | L | LFE | Le | Ls | R | Re | Rs
CP750.sys.pcm_route_5	C | L | LFE | Le | Ls | R | Re | Rs
CP750.sys.pcm_route_6	C | L | LFE | Le | Ls | R | Re | Rs
CP750.sys.pcm_route_7	C | L | LFE | Le | Ls | R | Re | Rs
CP750.sys.pcm_route_8	C | L | LFE | Le | Ls | R | Re | Rs
CP750.sys.power_on_input	dig_1 | dig_2 | dig_3 | dig_4 | film | last
CP750.sys.silent_switch	off | on
CP750.sys.subwoofer_filter	50–100
CP750.sys.surround_delay	0–150
help	Returns list of commands
status	Returns all parameter status
mfg_print_log	extract event log
Legacy ASCII Strings	**Parameter or Action**
4xaes_input	dig_1 input mode (DMA8 legacy string)
aes_input	dig_2 input mode (DMA8 legacy string)
optical_input	dig_4 input mode (DMA8 legacy string)
film	film input mode (DMA8 legacy string)

7.3   Remote Commands and Control

The CP750 is designed for remote communication using serial or Ethernet connections.

7.3.1   Serial

ASCII character strings sent to the rear-panel serial port can be used to set CP750 parameters and obtain current CP750 status information. The currently available remote commands are listed in Table 7-9.

Serial Communication

Connections can be made from the CP750 rear-panel serial port to a PC serial port or other RS-232 device. The serial port speed on your PC should be set to 9600 baud, 8 data bits, no parity, 1 stop bit. After the CP750 is powered on, the commands can simply be typed from a program such as HyperTerminal.

7.3.2 Ethernet

ASCII character strings can be sent through telnet to set CP750 parameters and obtain current CP750 status information. The currently available remote commands are listed in Table 7-9.

Ethernet Communication

Default CP750 Ethernet Parameters

IP Address: 192.168.1.136

Subnet Mask (Netmask): 255.255.255.128

Gateway: 192.168.1.129

ASCII control over TCP command strings must be sent to port 61408.

DHCP is off.

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If you have a question or comment about this chapter, send us an email.