Film-Tech

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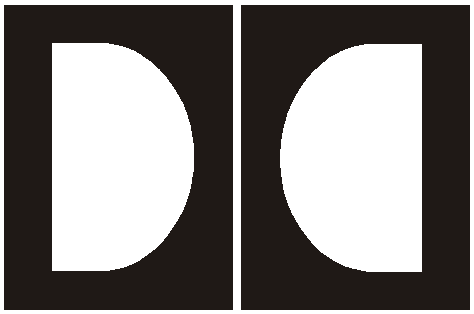

Dolby®
Model DMA™ 8
Digital Media Adapter™
Installation Manual

Issue 1 Part Number 91802

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Table of Contents

List of Figures

List of Tables

Chapter 1 Introduction

Thank you for purchasing the Dolby® Model DMA™8 Digital Media Adapter™. This new cinema audio tool, a direct result of Dolby's mission to develop technologies that improve sound recording and reproduction, allows you to stay at the forefront of quality entertainment presentation now and into the future.

The DMA8 expands the use of a cinema beyond traditional film applications. It equips any theatre for a wide variety of uses, providing capabilities far beyond that of simply showing movies to the general public. The DMA8 enables theatres to provide audio solutions to today's alternative programming challenges, such as pay-per-view events and digital broadcasting.

The unit provides a straightforward interface with existing Dolby cinema processors CP650, CP500, CP65, CP55, CP45, and CP200. High-quality audio can be presented from a wide variety of the audio sources:

- High-definition video server
- PCM
- DVD
- Dolby Digital (consumer, non-film-based)
- Broadcast
- Dolby E

The DMA8 is compatible with existing theatre automation. Its accommodation for multiple formats and future upgrades make it an essential tool for an evolving digital cinema market.

When the DMA8 is in Film mode, standard six-channel analog signals from any source, such as a DA20, are routed through the DMA8 to the six-channel input of a cinema sound processor. In Digital Media mode, the DMA8 decodes and routes signals from a variety of non-film sources (PCM, DVD, broadcast, Dolby E, and with an optional Cat. No. 767 card, SDI) to the existing cinema sound processor. The DMA8 software enables the user to select programs for applications that contain multiple audio formats.

Like all Dolby cinema sound products, the DMA8 is fully supported by hundreds of factory-trained technicians worldwide, on-call emergency assistance, and the most experienced distributor network in the industry.

Regulatory Notices

FCC

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 or her own expense.

Canada

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

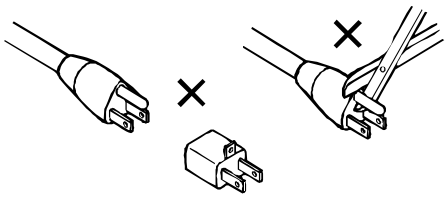
UL

WARNING: Troubleshooting must be performed by a trained technician. Do not attempt to service this equipment unless you are qualified to do so.

Check that the correct fuses have been installed. To reduce the risk of fire, replace only with fuses of the same type and rating.

Exposed portions of the power supply assembly are electrically "hot". To reduce the risk of electrical shock, the power cord MUST be disconnected when the power supply assembly is removed.

The ground terminal of the power plug is connected directly to the chassis of the unit. For continued protection against electric shock, a correctly wired and grounded (earthed) three-pin power outlet must be used. Do not use a ground-lifting adapter and never cut the ground pin on the three-prong plug.



UK

The power cord, Dolby Part No. 92021, supplied for use in Europe is not suitable for use in the UK. To use the cord in the UK, cut off the CEE7/7 plug and replace with an approved BS 1363 13A plug:

- The core that is coloured green and yellow must be connected to the terminal in the plug identified by the letter E, or by the earth symbol ⏚, or coloured green, or green and yellow.
- The core that is coloured blue must be connected to the terminal that is marked with the letter N or coloured black.
- The core that is coloured brown must be connected to the terminal that is marked with the letter L or coloured red.
- This apparatus must be earthed.

EU

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

IMPORTANT SAFETY NOTICE

This unit complies with the safety standard EN60065. 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:

GB

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

Live—Brown Neutral—Blue Earth—Green/Yellow

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.

F

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

Phase—Brun Neutre—Bleu Terre—Vert/Jaune

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:

D

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

Phase—braun Nulleiter—blau Erde—grün/gelb

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:

I

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

Filo tensione—Marrone Neutro—Blu Massa—Verde/Giallo

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:

E

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

Vivo—Marrón Neutro—Azul Tierra—Verde/Amarillo

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:

S

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

Fas—Brun Neutral—Blå Jord—Grön/Gul

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:

NL

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

Fase—Bruin Nul—Blauw Aarde—Groen/Geel

Chapter 2
Installation

2.1 Unpacking

Before unpacking the DMA™8, inspect the outer carton for shipping damage. If the carton shows damage, inspect the unit in those areas.

Carefully remove the unit from its carton, remove the plastic wrapping, and place on a flat surface. Look for the following items, which are packed with the DMA8:

- PC setup software
- Power cord
- Spare fuse

2.2 Equipment Required

A PC running Windows® 98 or later is required for proper installation of the DMA8:

2.3 Mounting—Proper Grounding

Various types of noise may be present in and around the projection booth without audible signs of anything being wrong. Proper mounting and wiring of booth equipment helps ensure trouble-free performance.

We recommend that star washers be installed on all rack-mounting screws to ensure good ground contact. This helps prevent electrical noise problems.

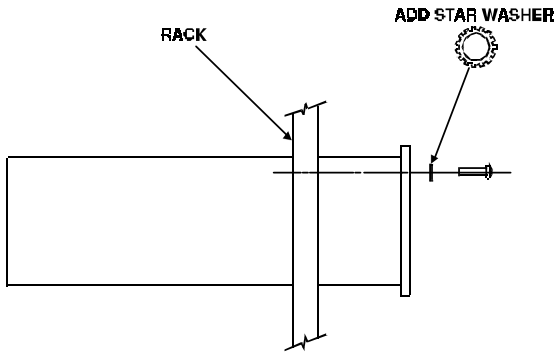


Figure 2-1 Use Star Washers

The DMA8 must be mounted in the same rack as the cinema processor to avoid potential problems with ground loops, radiated interference, and so on.

WARNING: **Follow all local codes and regulations covering electrical wiring.**

2.4 Fuse Information

WARNING: **To reduce the risk of fire, replace fuses only with the same type and rating.**

The DMA8 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.

Check Main Fuse

The main fuse rating is:

T 1A L (time-lag, 1 amp, 250 V, 20 mm, low breaking capacity) for all operating voltages.

WARNING: **Before the following steps are performed, ensure that power to the unit is disconnected.**

1. Use a small flat-blade screwdriver to open the fuse compartment door in the AC power input housing (Figure 2-2). Carefully pull out the fuse carrier.
2. Check that the fuse has the correct rating. The fuse carrier must be inserted into the compartment with the orientation shown in Figure 2-2. *Do not force the carrier into the compartment or both could be damaged.*
3. Snap the fuse compartment door closed.

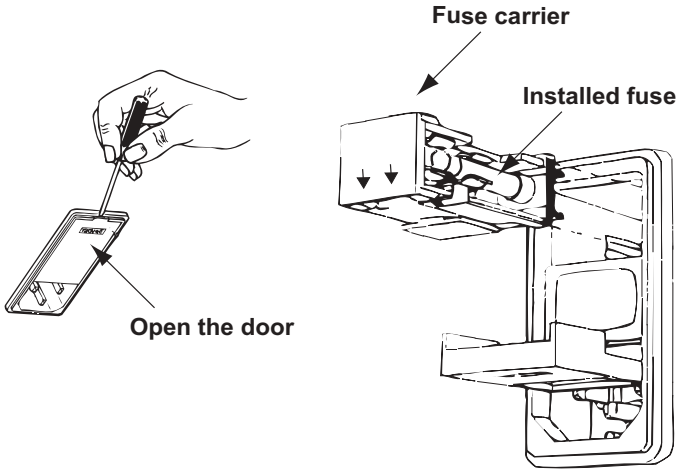


Figure 2-2 Checking the Main Fuse

Internal Fuse

The switching power supply contains a separate fuse. Most fault conditions should be protected by the main fuse.

If you find it necessary to replace the internal fuse, be certain to replace it with a fuse of the same type and rating as printed on the switching power supply board.

Mains Power Wiring

In some countries the primary mains cable may not have a connector fitted. These non-terminated 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 mains outlet then do not use it. Consult a qualified electrician.**

2.5 Digital Audio Sources

The DMA8 accepts a wide range of digital audio sources including:

- High-definition video server, player, or receiver
- Professional digital video tape recorder (VTR)
- Digital satellite or cable television receiver
- DVD player
- Terrestrial digital television broadcast
- CD player

A range of digital audio formats are also accepted by the DMA8 including:

- Dolby® Digital (consumer, non-film-based)
- Dolby E
- PCM (digital stereo audio)

All of these sources and formats use one of the following three methods to package the digital data into a physical connection.

Professional Interface Standards for Digital Audio

There are two professional interface formats used for digital audio: **AES/EBU** and **AES3**. These formats 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, nominal peak-to-peak signal level of 5 V, and most commonly, XLR connectors. AES3 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.

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

Professional video equipment usually uses the AES3 variation of this interface, with BNC connectors. Like the use of XLR connectors on pro audio equipment, the adoption of BNC connectors for the audio on professional video equipment stems from their existing use for the video signal. Also, the unbalanced AES3 signal can connect to more than one piece of equipment with the loop-through connectors that are available on some devices. Lastly, it is robust for long cable runs.

Consumer Interface Standards for Digital Audio

The consumer interface standard for digital audio is **S/PDIF** (IEC61937). S/PDIF is found using either coaxial unbalanced connections (one signal conductor plus shield) with a characteristic input impedance of 75Ω with RCA (phono) connectors, or a fiber-optic cable with Toslink® connectors. The unbalanced coaxial connection has a peak-to-peak signal level of 0.5 V. Although S/PDIF-specific cables with suitable connectors can be purchased, good results can also be obtained using high-quality 75Ω video cable with the appropriate connectors and/or adapters.

Cable Issues

Even in digital audio, noise-free signals are still very important. The cable used for digital signals is specifically designed for digital audio use even though it appears to be the same as that 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 wish to terminate them yourself) for AES/EBU connections and high-quality 75Ω video cables with BNC connectors for AES3 connections. Use of cables or connectors with incorrect impedance or those not designed for digital transmission compromises the integrity of the bitstream and may create an unreliable link between pieces of equipment, particularly with long cable runs.

Multiple Sources—Conversion Between Interface Standards

Although some details of the bitstreams used in the AES and S/PDIF standards differ, the audio information is exactly the same. As a consequence, most audio equipment accepts either standard with no need to convert the bitstream itself; this is the case with the DMA8. However, if you intend to connect sources across different types of digital audio inputs, **do not** attempt to convert a digital interface type by, for example, directly wiring an XLR connector to a BNC or RCA plug. This causes an impedance mismatch and signal reflections, resulting in degradation of the digital waveform. It may seem to work, but the results are unreliable and dropouts occur.

For conversion between the AES3 and S/PDIF formats you can use high-quality RCA (phono plug)-to-BNC adapters, since the cable and impedance are the same (75Ω).

For conversion between the AES/EBU and AES3 or AES/EBU and S/PDIF formats, a simple and economical method is to use inline transformers. These devices perform the necessary impedance and balanced/unbalanced conversion. The following table shows some examples of suitable adapters. The unbalanced connector in these examples is a BNC. BNC-to-RCA adapters can be added to connect to consumer S/PDIF connections. The units listed 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 like multiple inputs, inputs for Toslink digital connections, and multiple outputs.

2.6 Connections

Refer to the connection diagrams in Section 2.7 for installation wiring to your cinema processor. The diagrams are located at the end of this chapter. Use the appropriate page for your cinema processor model. Pinout information on each connector is listed in Section 5.4

To provide proper operation in locations where there is a large RF or other interference field, ensure that the cable types, lengths, and pin assignments are strictly adhered to. Shields must connect only to the chassis and should not be paralleled with the "–" side of inputs or outputs.

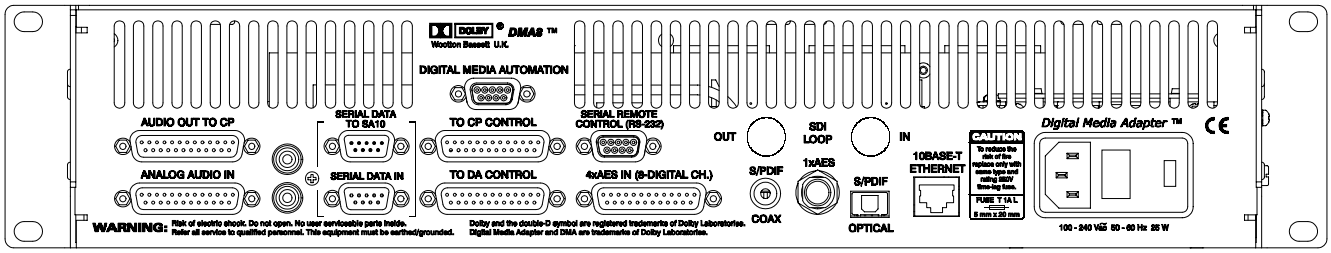


Figure 2-3 Rear-Panel View

2.6.1 Digital Media Automation Connector

The DMA8 provides a ground-switching interface for connecting to a theatre automation system. The automation system can switch between film sound (pass-through) and a digital media source. The connector can be wired to automation systems to switch the DMA8 in and out of Digital Media mode. This function is a duplication of the front-panel Digital Media and Film buttons.

2.6.2 RS-232 Serial Control Port

The rear-panel RS-232 connector can be used for serial control of the DMA8 using ASCII character strings for remote switching and testing. See Section 5.3 for a listing of the available serial commands. An expanded command set will become available in future software releases.

2.6.3 Serial Data In/Out—Auto Dolby Digital Surround EX Control

The Serial Data In connector accepts the film sound data bitstream from a Dolby DA20. The Serial Data To SA10 connector outputs the bitstream to a Dolby SA10 equipped with an Cat. No. 814A Surround EX™ auto-switching board.

Note: SA10s equipped with the original Cat. No. 814 (non-A) board do not need wiring to this connector. Automatic switching of Surround EX does not function.

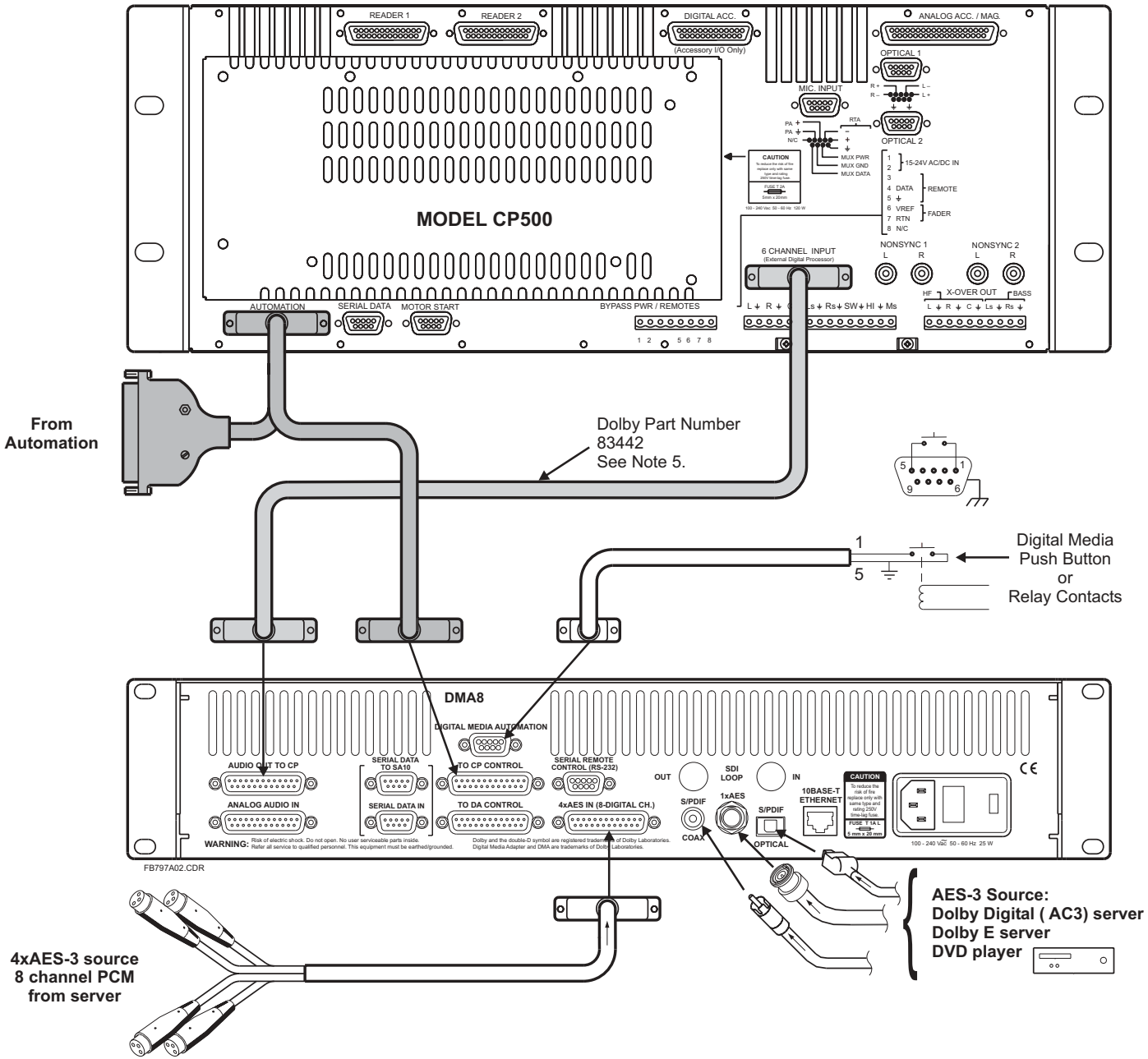
If you have an SA10 equipped with a Cat. No. 814A board, disconnect the existing serial data cable from the DA20 rear panel and connect it to the DMA8's Serial Data To SA10 connector. Add a jumper cable to connect the DA20 Serial Data output to the DMA8's Serial Data In connector.

When in Film mode, the film sound data bitstream passes directly from the DA20 to the SA10, allowing the DA20 to control the Surround EX switching function in the SA10.

When in Digital Media mode, the DMA8 controls the automatic Surround EX function of the SA10 by inserting (or not inserting) the Surround EX data flags in the bitstream to the SA10.

2.7 Wiring Diagrams

This section contains connection diagrams for various cinema processors. Choose the appropriate diagram based on your installed equipment.



Notes:

1. Follow all local electrical and building codes.

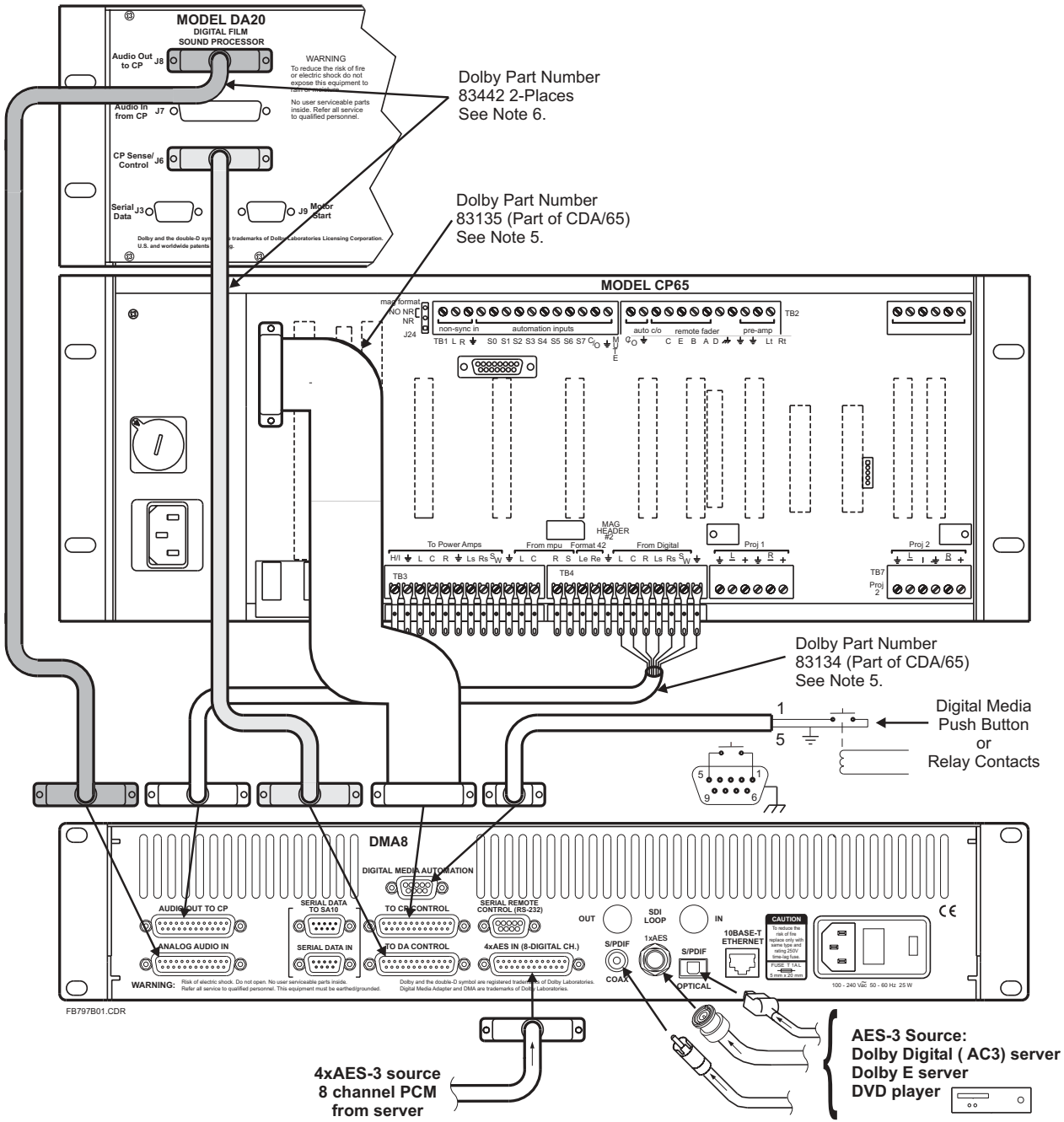
2. Use earthed (grounded) conduit wherever possible. Avoid routing signal wiring near electric motors, rectifiers, power wiring, dimmer wiring or other sources of electrical noise.

3. For two conductor with shield wiring, use Belden 8451 2-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 (111pF per meter).

4. All shields must be connected to the CHASSIS of the CP500 or DMA8 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 to the housing.

5. Shielded audio cable (Dolby Part No. 83442) is included in the CDMA/500 cable set shipped to all countries.

DMA8 TO CP500 INSTALLATION WIRING



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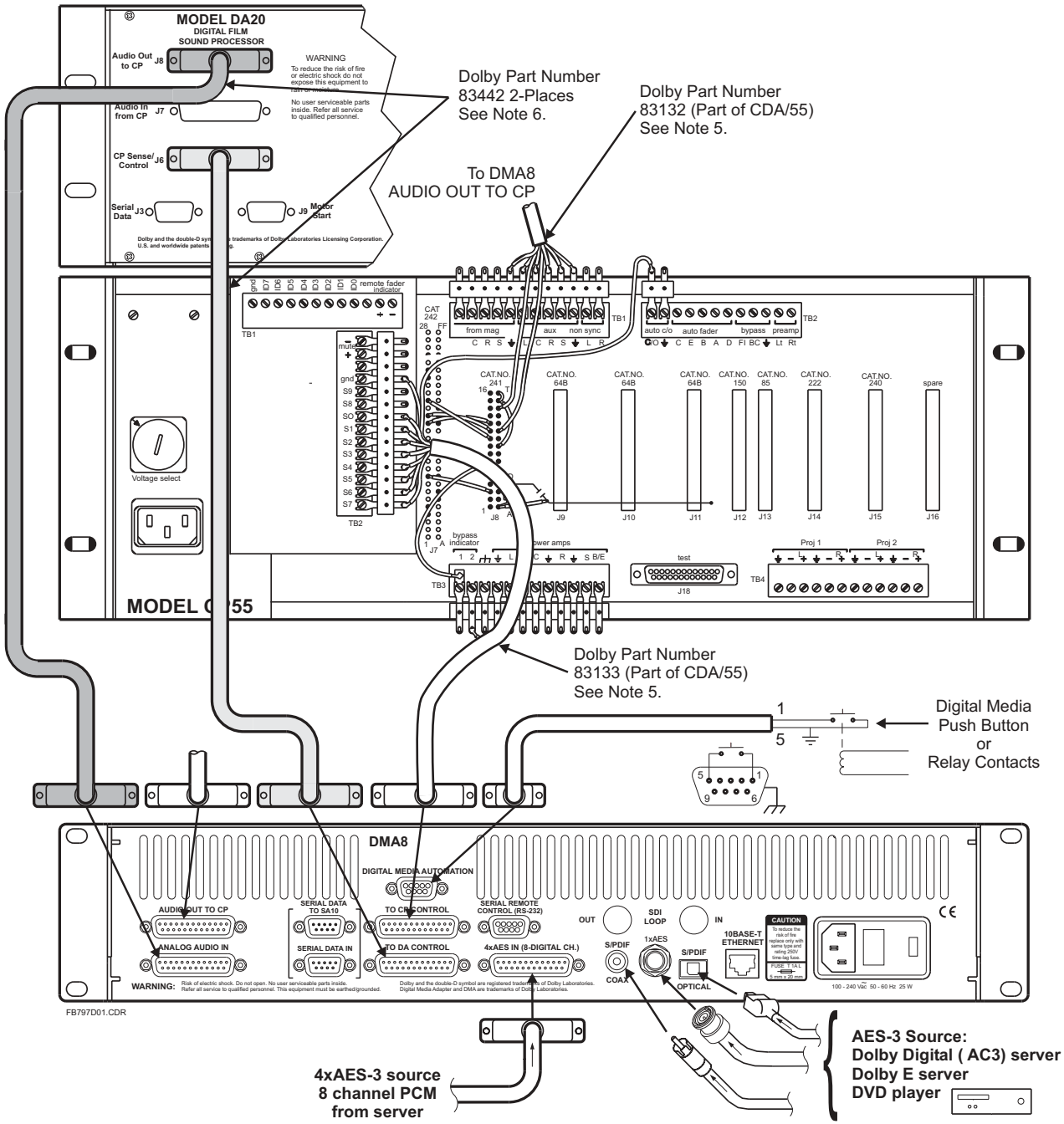
3. For two conductor with shield wiring, use Belden 8451 2-conductor shielded cable or equivalent: tinned copper, twisted pair, 22 AWG stranded tinned copper drain wire, aluminum-polyester shield, 100 percent shield coverage, conductor to conductor (111pF per meter).

4. All shields must be connected to the CHASSIS of the DA20 or DMA8 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 to the housing.

5. Re-attach existing cables (Dolby part No's 83134 and 83135) to the DMA8 as shown. (Cables are included in CDA/65 cable set).

6. Shielded cables (Dolby Part No. 83442) are included in the CDMA/A cable set.

DMA8 TO CP65 / DA20 INSTALLATION WIRING



Notes:

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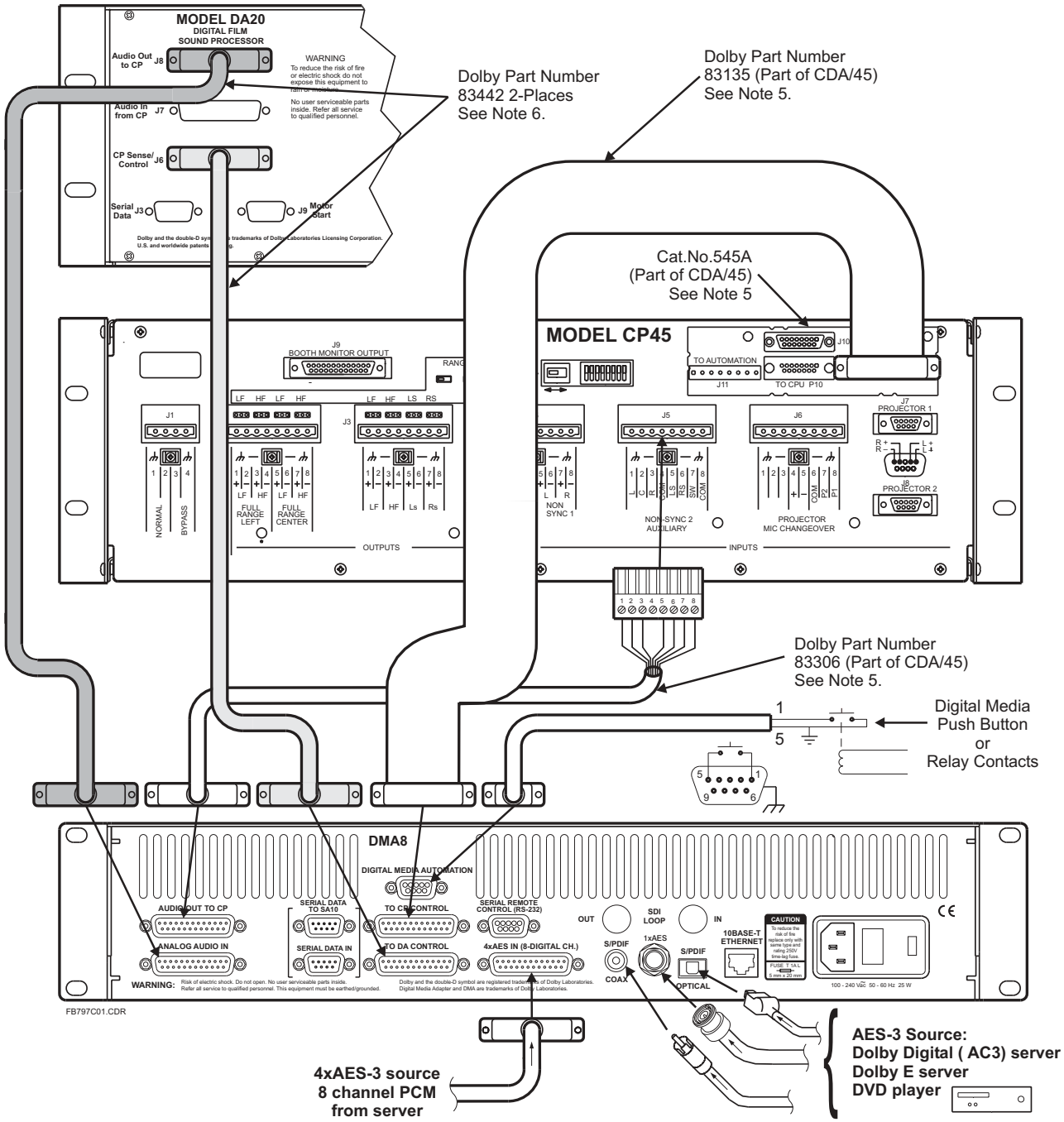
3. For two conductor with shield wiring, use Belden 8451 2-conductor shielded cable or equivalent: tinned copper, twisted pair, 22 AWG stranded tinned copper drain wire, aluminum-polyester shield, 100 percent shield coverage, conductor to conductor (111pF per meter).

4. All shields must be connected to the CHASSIS of the DA20 or DMA8 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 to the housing.

5. Re-attach existing cables (Dolby part No's 83132 and 83133) to the DMA8 as shown. (Cables are included in CDA/55 cable set).

6. Shielded cables (Dolby Part No. 83442) are included in the CDMA/A cable set.

DMA8 TO CP55 / DA20 INSTALLATION WIRING



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.

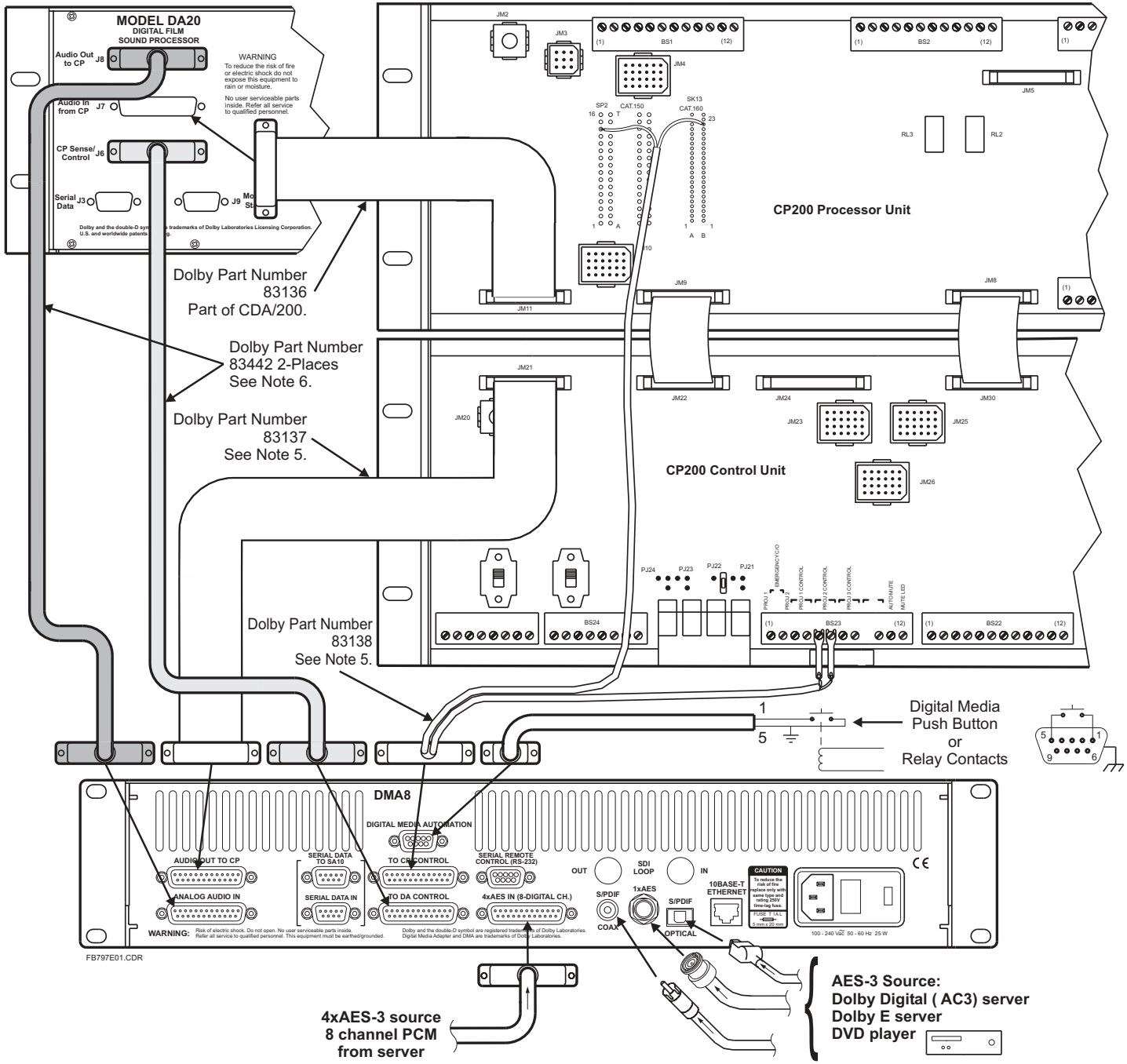
3. For two conductor with shield wiring, use Belden 8451 2-conductor shielded cable or equivalent: tinned copper, twisted pair, 22 AWG stranded tinned copper drain wire, aluminum-polyester shield, 100 percent shield coverage, conductor to conductor (111pF per meter).

4. All shields must be connected to the CHASSIS of the DA20 or DMA8 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 to the housing.

5. Re-attach existing cables (Dolby part No's 83306 and 83135) to the DMA8 as shown. (Cables and Cat.No.545A are included in CDA/45 upgrade kit. All existing Cat.No.545 assemblies must be upgraded to Cat.No.545A.)

6. Shielded cables (Dolby Part No. 83442) are included in the CDMA/A cable set.

DMA8 TO CP45 / DA20 INSTALLATION WIRING



Notes:

1. Follow all local electrical and building codes.

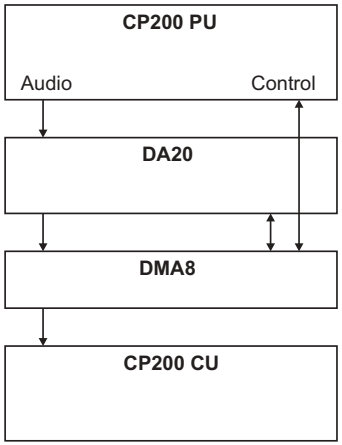
2. Use earthed (grounded) conduit wherever possible. Avoid routing signal wiring near electric motors, rectifiers, power wiring, dimmer wiring or other sources of electrical noise.

3. For two conductor with shield wiring, use Belden 8451 2-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 (111pF per meter).

4. All shields must be connected to the CHASSIS of the DA20 or DMA8 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 to the housing.

5. Re-attach existing cables (Dolby part No's 83137 and 83138) to the DMA8 as shown. (Cables are included in CDA/200 cable set).

6. Shielded cables (Dolby Part No. 83442) are included in the CDMA/A cable set.



SIGNAL FLOW DIAGRAM

DMA8 TO CP200 / DA20 INSTALLATION WIRING

Chapter 3
Setup

3.1 Setup Software

Completing the DMA™8 installation requires the use of a computer running Windows 98 or later, and the DMA8 setup software. Connect the computer via the front-panel serial port. The software provides the ability to perform the following functions:

- Set the priority for automatic selection of the active digital media source
- Set the cinema processor model number connected to the DMA8
- Select which automation line is tied to the front-panel "Film" switch
- Select which automation line is tied to the front-panel "Digital Media" switch
- Set the surround delay
- Enable and disable Dialogue Normalization
- Set the global audio delay
- Set discrete or Dolby® Pro-Logic® decoding
- Set the eight-channel analog input to 5.1 channel downmixing
- Select which audio group to disembed from an SDI stream
- Select which program of SDI audio to listen to: Ch. 1&2, or Ch. 3&4

Additionally the software monitors specific operations of the DMA8 that can:

- Notify user of decoding (PCM, Dolby Digital, or Dolby E)
- Display what mode (Film or Digital Media) is selected
- Display level meters for signal level monitoring
- Display the frame rate of material encoded in Dolby E
- Display what type of option card is installed, if any
- Display status of Dolby Surround Pro Logic decoding for two-channel PCM audio signals
- Display dialogue normalization and channel mode metadata information
- Display the firmware version number

3.2 Running Setup

After installing the software, run it to establish the connection between your PC and the DMA8. The Open Device screen appears:

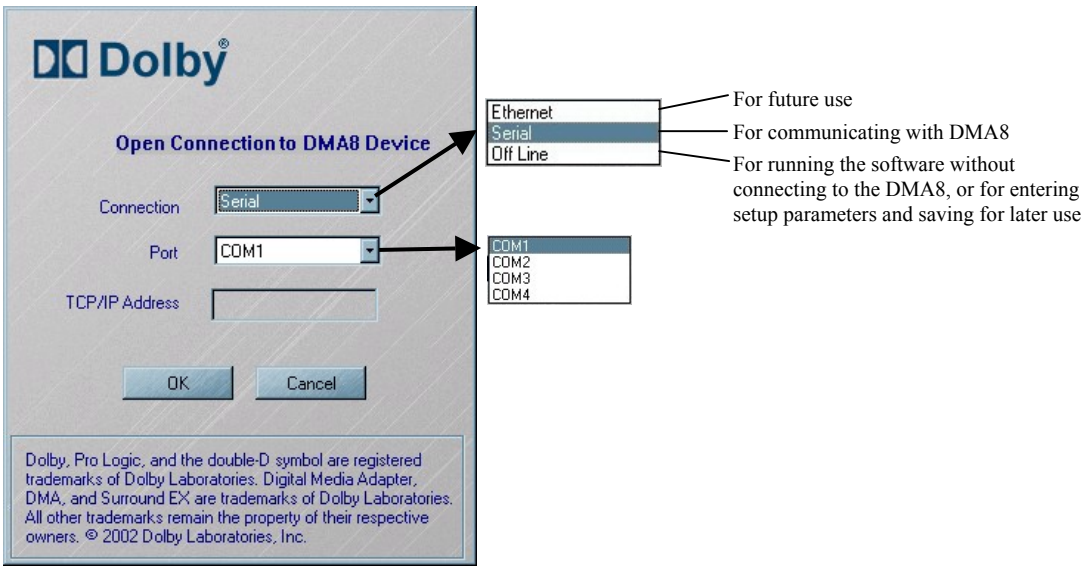


Figure 3-1 Open Device Screen

3.2.1 Main Screen

For initial DMA8 setup, bypass this screen by selecting **Change Settings**.

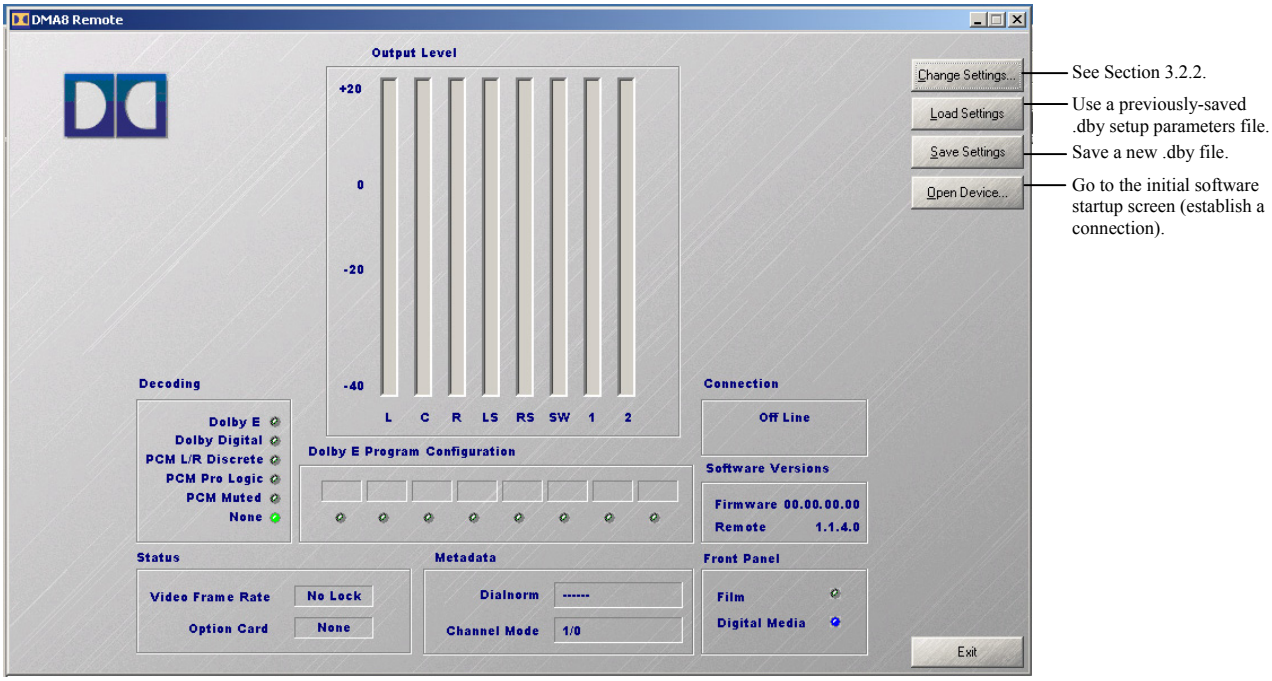


Figure 3-2 Main Screen

This screen is used to monitor all aspects of operation. Settings cannot be changed on this screen. Also, the screen provides remote troubleshooting information via the Internet.

3.2.2 Change Settings

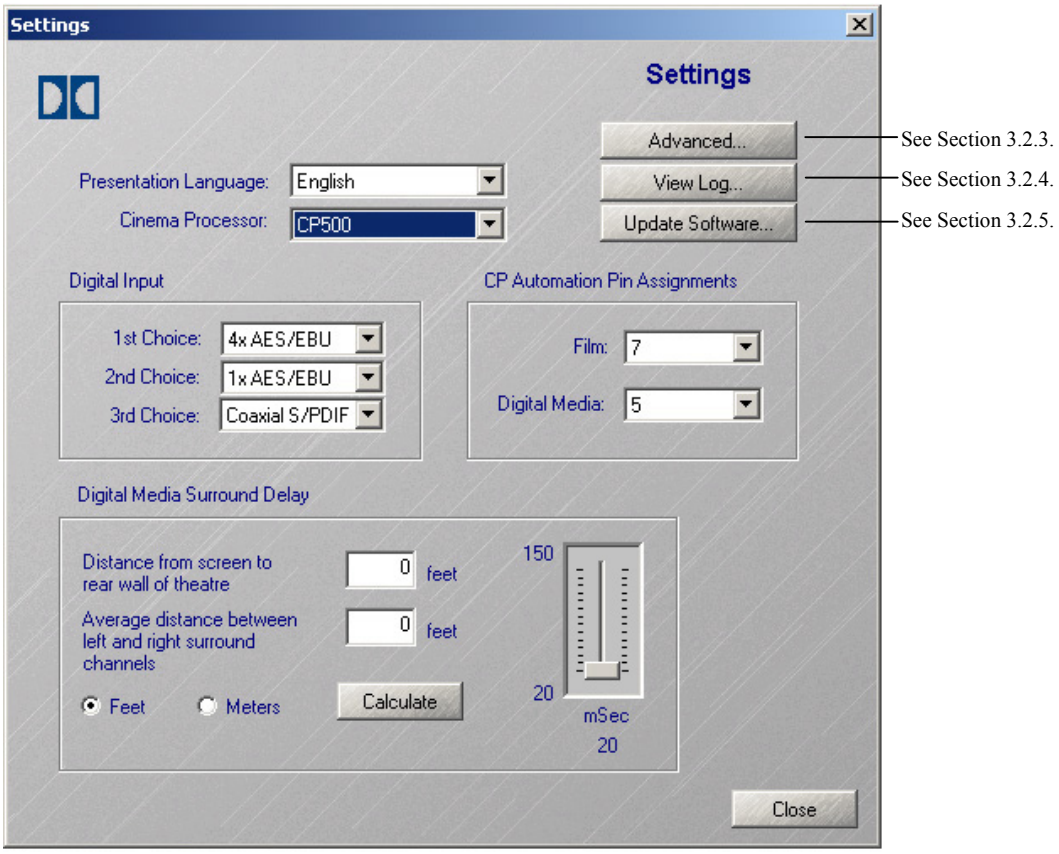


Figure 3-3 Settings Screen

Select the cinema processor model connected to the DMA8.

Digital Input

Select which digital inputs you wish to associate with the Digital Media front-panel button. When Digital Media is selected via the front-panel button, or via the digital media automation connections, the DMA8 automatically selects the active input by priority based on the list of choices. If choices are not made on this screen, the DMA8 scans all inputs and locks on the first input it finds with a valid data stream.

CP (Cinema Processor) Automation Pin Assignments

If you are performing the setup with a Dolby CP500, confirm that the default formats are assigned to the appropriate softkeys. Use the pull-down arrow for reassignment, if necessary.

Digital Media Surround Delay

Set the surround delay based on the dimensions of the auditorium. Alternatively, the slider can be used if you know the desired delay setting.

3.2.3 Change Settings/Advanced Button

Miscellaneous Tab

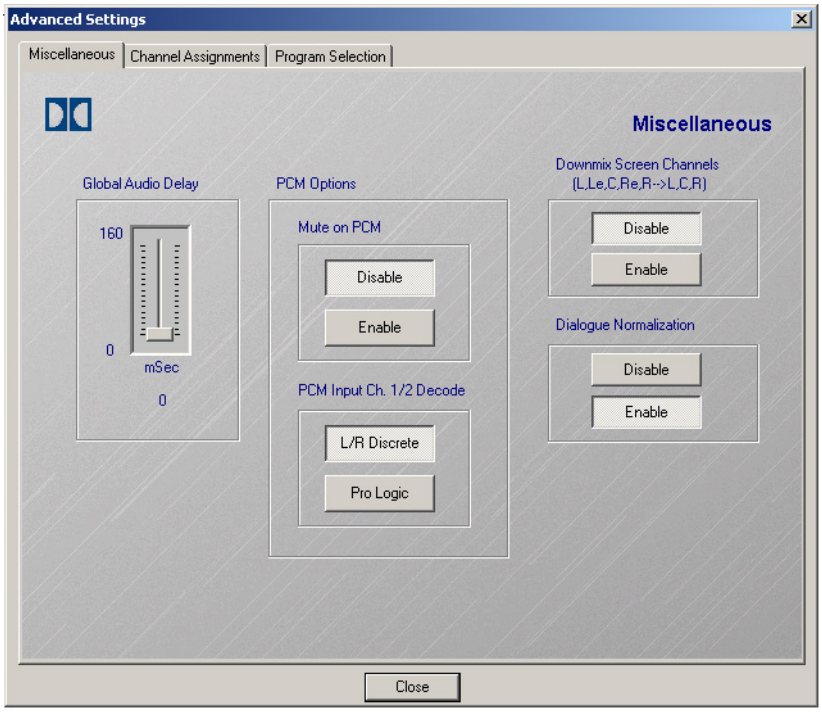


Figure 3-4 Change Settings/Advanced—Miscellaneous Tab

Global Audio Delay:

Allows you to set a delay on the digital media audio to synchronize the audio with the picture.

Mute on PCM

If enabled, the DMA8 mutes when PCM audio is detected.

PCM Input Ch. 1/2 Decode

Allows you to set the decoding method for the first AES pair in the input bitstream: L/R discrete decoding, or Dolby Pro-Logic L, C, R, S, SW decoding.

Downmix Screen Channels

When enabled, five screen-channel mixes from digital media sources are downmixed to three channels (L, C, R) for proper playback in cinemas with three screen channels.

Dialogue Normalization

When enabled, the overall playback level is set in relation to the center channel information. Data embedded in the Dolby Digital bitstream sets this relationship.

Channel Assignments Tab

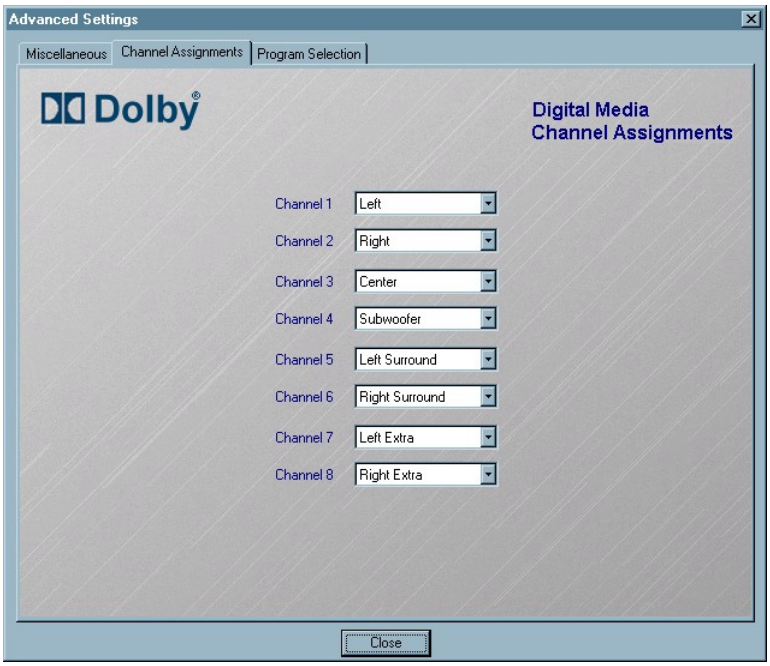


Figure 3-5 Change Settings/Advanced—Channel Assignments Tab

Input media audio channels can be reassigned to alternative DMA8 outputs via this screen.

Program Selection Tab

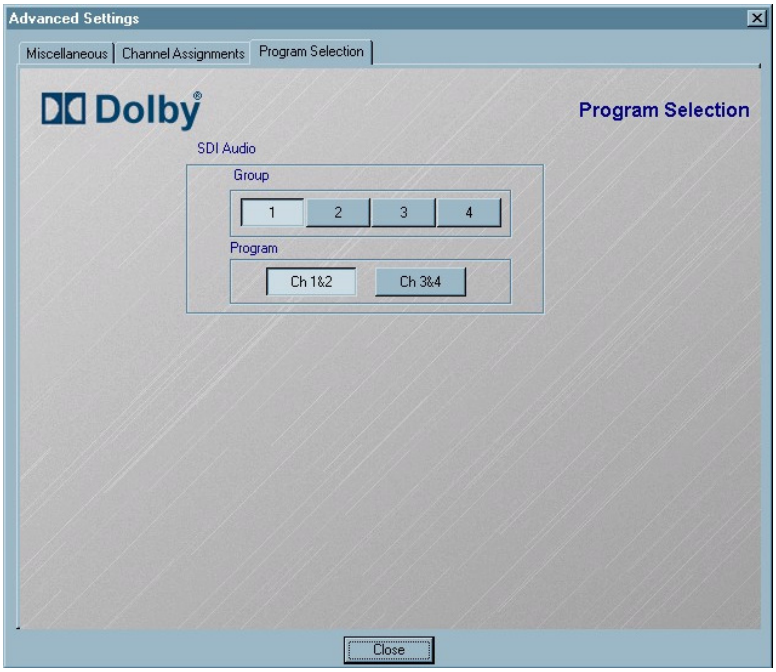


Figure 3-6 Change Settings/Advanced—Program Selection Tab

The audio group from a disembeded SDI bitstream can be selected for playback via this screen.

3.2.4 Change Settings/View Log

Event Log

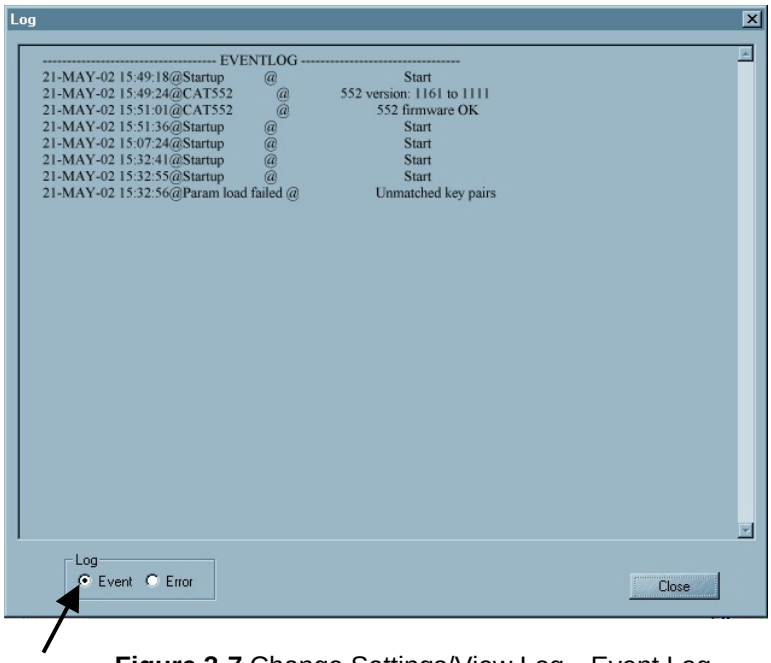


Figure 3-7 Change Settings/View Log—Event Log

Each entry is time-stamped. Examples are shown.

Error Log

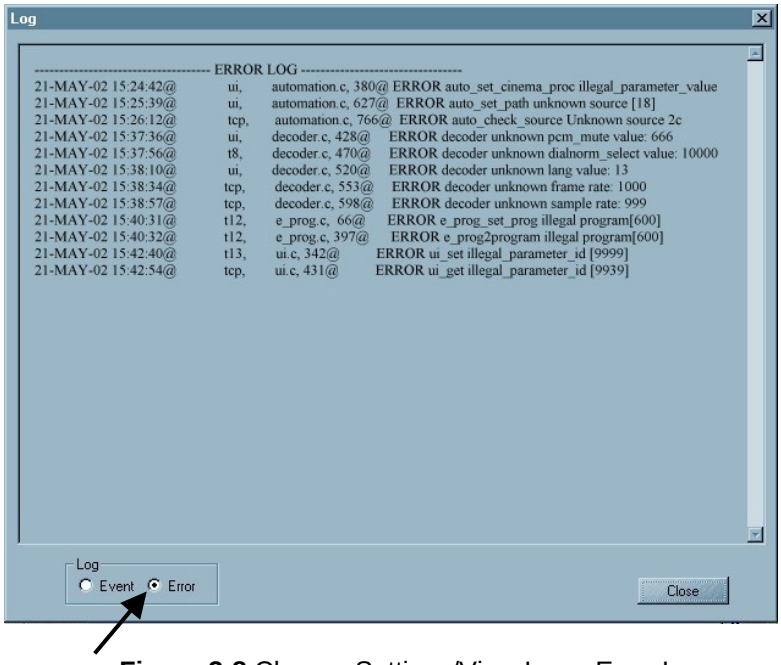


Figure 3-8 Change Settings/View Log—Error Log

Select Error Log to view a list of operational errors reported.

3.2.5 Change Settings/Update Software

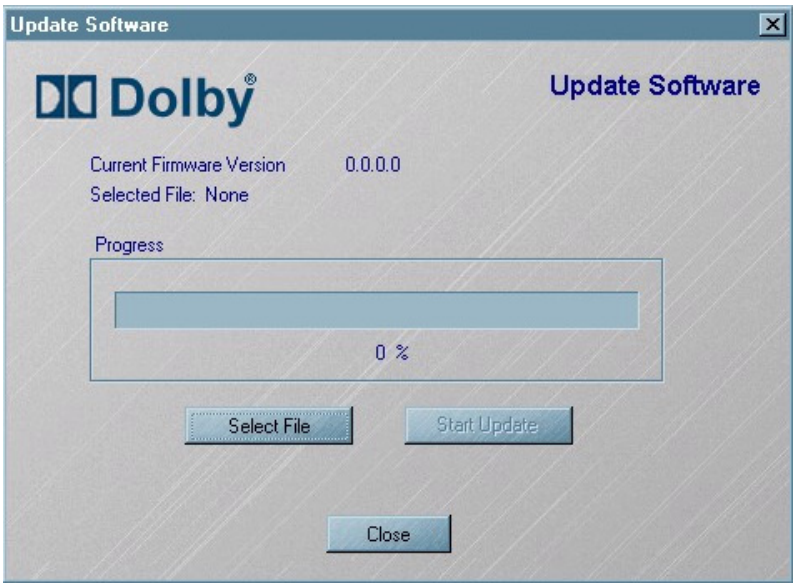


Figure 3-9 Change Settings/Update Software

1. Click **Select File** and browse to the desired file.
2. Click **Start Update**.
3. Review the warning message, then select **Update** if desired.

Chapter 4
Operation

4.1 Front-Panel Switches

The two front-panel switches, Film and Digital Media, select a user-determined input format based on the cinema processor settings, or a digital media input determined by the setup software (PCM, Dolby® Digital, or Dolby E bitstreams).

4.2 Power

A mains power switch is located on the rear-panel power inlet module. It should remain in the ON position, with power normally controlled from a centrally switched facility location. The power-on mode is “Film.”

A five-second self-test runs on power-up. The output is muted during the self-test.

4.3 Surround Delay

When the audio comes from a digital media source, it is necessary to apply a delay to the surround channels, based on the dimensions of the auditorium. The setup software allows an adjustment of 0 to 150 ms in 1 ms steps. The default setting at the factory is 0.

Chapter 5
Technical Reference

5.1 DMA8 Specifications

Construction
2-U rack-mount chassis frame

Digital Signal Inputs
All inputs accommodate PCM audio at 48 and 44.1 kHz (16-, 20-, and 24-bit); Dolby Digital; and Dolby E bitstreams at the following frame rates: 23.98 (24 pulldown), 24, 25, 29.97. 30 fps
AES: AES-3ID-1995/SMPTE 276M, unbalanced, via 75Ω BNC connector
4 × AES: AES/EBU 110Ω ±20%, transformer isolated, balanced, via 25-pin D-connector, accommodates 8-channel PCM audio
S/PDIF: Coaxial two-channel (IEC61937), 75Ω via RCA connector
S/PDIF: Fiber optic two-channel via Toslink connector
SDI (with optional Cat. No. 767 card): Input and output (active loop), via 75Ω BNC connectors

Analog Signal Input
Eight-channel: For external digital processor; hard-wired pass-through via relays, 25-pin female D-connector

Analog Signal Output
Eight-channel: L, R, C, Ls, Le, Rs, Re, SW, 300 mV operating level, 25-pin male D-connector, unbalanced

Other Connections
Front-panel connectors for external PC control, setup, and software upgrades; RS-232, 9-pin female D-connector
Front-panel USB connector (future use)
Rear-panel Serial Remote Control: RS-232, for external control, 9-pin female D-connector
Digital Media Automation: For server control of Digital Media/Film mode, ground switching, 9-pin female D-connector
To CP Control, To DA Control: (automation) for controlling and indicating status, 25-pin male and female D-connectors
Serial Data to SA10, Serial Data In: For SA10 control, 9-pin male and female D-connectors
Rear-panel Ethernet link (future use), RJ-45

Distortion
<0.005%, 4 × AES input-to-analog output

Dynamic Range
Typically 99 dB

Power Requirements
100–240 VAC, 50–60 Hz, 25 W
Unit designed to operate from a centrally switched power source

Dimensions and Weight
88 × 483 × 362 mm (3.5 × 19 × 14.25 inches)
Net: 3.6 kg (8 lb)

Environmental Conditions
Operating: 0° to 40°C (32° to 104°F),
Non-operating (storage): 0° to 85°C (32° to 185°F)
Humidity: 20 to 80% relative, non-condensing

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 73/23/EEC and EMC Directive 89/336/EEC and carries the CE marking accordingly.

Warranty
One-year limited, parts and labor

Specifications subject to change without notice.

5.2 DMA8 Repair

There are no user-serviceable components inside the DMA™8. If you are experiencing problems, please return the unit to your dealer or to Dolby Laboratories for repair.

5.3 Serial Port Command Set

A set of ASCII commands can be used to control the DMA8 via the RS-232 serial port located on the rear panel of the unit. The front-panel serial port cannot be used for this function. Future software releases will add commands to select various tests and audio routing paths through the DMA8 for testing or control. Table 5-1 describes ASCII commands currently available. The serial commands are sent at 115.2 kbps.

Table 5–1 Serial Port Command Strings

Command String	Input Selected	Notes
mfg_digmed	Digital Media Mode	Same as pressing the **Digital Media** button
mfg_film	Passthru	Same as pressing the **Film** button

5.4 Connectors

5.4.1 Rear-Panel Connector Descriptions and Types

Table 5–2 Rear-Panel Connector Descriptions and Types

Panel Label	Description	Type
Digital Media Automation	Remote theatre control input (momentary contact)	DB-9
Serial Data In	DA10/20 interface for Auto Surround EX (input)	DB-9
Serial Data to SA10	SA10 interface for Auto EX Surround EX (output)	DB-9
10BASE-T Ethernet	Ethernet connector for remote monitoring	RJ-45
To DA Control	DA20 Automation port	DB-25
To CP Control	Cinema processor Automation port	DB-25
Analog Audio In	Eight-channel analog input for external digital processor	DB-25
Audio Out to CP	Eight-channel analog output: L, Le, C, Re, R, Ls, Rs, Sw	DB-25
S/PDIF Coax	S/PDIF coax audio in	RCA
S/PDIF Optical	S/PDIF optical audio in	Toslink
4x AES In	4 x AES/EBU input (eight-channel PCM audio)	DB-25
1x AES	Dolby E or Dolby Digital, AES3	BNC
	AC power inlet module with filter	IEC

5.4.2 Digital Media Automation Connector

Table 5–3 Digital Media Connector Pinout

Pin	Function	Specification
1	Digital Media mode	Pulse to ground (push-button, relay contacts, etc.)
2	Film mode	Pulse to ground (push-button, relay contacts, etc.)
3	N/C	
4	N/C	
5	Ground	
6	N/C	
7	N/C	
8	N/C	
9	+5 VDC (current-limited)	Maximum current output=20 mA

5.4.3 Analog Audio In/Out Connector

Table 5–4 Analog Audio In/Out Connector Pinout

Analog Audio In (From DA20) Pin Number	Signal Name
1	Signal ground
2	Right Surround input
3	Signal ground
4	Signal ground
5	Signal ground
6	Signal ground
7	Signal ground
8	Signal ground
9	Signal ground
10	Signal ground
11	Signal ground
12	Signal ground
13	Signal ground
14	Left input
15	Left Surround input
16	Right Extra input
17	Right input
18	Left Extra input
19	Signal ground
20	Center input
21	Mono Surround input
22	Signal ground
23	Signal ground
24	Subwoofer input
25	Spare input

Analog Audio Out (To Cinema Proc.) Pin Number	Signal Name
1	Signal ground
2	Right Surround output
3	Signal ground
4	Signal ground
5	Signal ground
6	Signal ground
7	Signal ground
8	Signal ground
9	Signal ground
10	Signal ground
11	Signal ground
12	Signal ground
13	Signal ground
14	Left output
15	Left Surround output
16	Right Extra output
17	Right output
18	Left Extra output
19	Signal ground
20	Center output
21	Mono Surround output
22	Signal ground
23	Signal ground
24	Subwoofer Output Band-limited to 300 Hz in Digital Media mode
25	Spare output

Note:
The output connector has the same pinout as the Dolby DA20 audio output connector.

5.4.4 4x AES In Connector

D/A conversion is applied to the four data streams input on this connector. After conversion, the eight analog channels are routed to the Audio Out to CP connector.

Table 5–5 4x AES In Connector Pinout

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

5.4.5 Serial Ports (Front and Rear), RS-232 Connectors

Table 5–6 Serial Ports Pinout

Pin No.	Connection
1	No connection
2	Data Out
3	Data In
4	Tied to pin 6
5	Chassis GND
6	Tied to pin 4
7	Tied to pin 8
8	Tied to pin 7

5.4.6 CP and DA Control Automation Connectors

Table 5–7 CP and DA Control Connectors Pinout

Pin No.	DMA8 CP Control and DA Control Connectors	CP500 Automation	CP65 Automation	CP55 Automation with Cat. No. 222 SR/A module	CP45 with Cat. No. 545A Automation Board (J12)
1	**(S0)** Automation select	(01) Mono	(01) Mono	(01) Mono	(01) Mono
2	**(S1)** Automation select	(04) Dolby A-type	(04) Dolby A-type	(05) Dolby SR	(04) Dolby A-type
3	**(S2)** Automation select	(05) Dolby SR	(05) Dolby SR	(04) Dolby A-type	(05) Dolby SR
4	**(S3)** Automation select	(10) Dolby Digital	(60) Non-sync / matrix		
5	**(S4)** Automation select	**(11) Six-channel input**	**(10) Dolby Digital**	(22) Magnetic	**(10) Dolby Digital**
6	**(S5)** Automation select		(42) Magnetic		
7	**(S6)** Automation select	(60) Non-sync 1	(60) Non-sync / std	(60) Non-sync	(60) Non-sync
8	**(S7)** Automation select	(61) Non-sync 2	(22) Magnetic	**(10) Dolby Digital**	
12	GND	GND	GND	GND	GND

Shaded boxes are DMA8 defaults for Digital Media format.

5.4.7 Automation Connections—CP55 with Cat. No. 321

Table 5–8 CP55 with Cat. No. 321 Installed

CP55 with Cat. No. 222 SR/A module and Cat. No. 321 (TB2 fanning strip)	CP55 with Cat. No. 222 module and Cat. No. 321 (TB2 fanning strip)
GND	GND
S9 (mute)	S9 (mute)
S8 (main/remote fader)	S8 (main/remote fader)
S0 (mono)	S0 (mono)
S1 (SR)	S1 (A-type without Surround)
S2 (A-type with Surround)	S2 (A-type with Surround)
S3	S3
S4 (magnetic)	S4 (magnetic)
S5	S5
S6 (non-sync)	S6 (non-sync)
S7 (Dolby Digital)	S7 (aux)