DOLBY® Digital Cinema System

The Dolby® Digital Cinema system is a powerful, comprehensive, and reliable solution designed specifically for the cinema. We engineered it from the ground up for real-world projection booths with the flexibility to meet your needs for years to come. The foresight and approach to quality that you have come to expect from Dolby went into developing this system.

Overview

The system comprises the Dolby Screen Server (DSS200) and Dolby Theatre Management System (TMS) software. The DSS200 combines a FIPS-certified media block with storage that houses digital content for playback. The media block decrypts the movie data and decodes the image. It outputs link-encrypted image data to the digital cinema projector and audio data to the cinema’s sound processor (such as a Dolby CP750 or CP650, or a Dolby DMA8Plus Digital Media Adapter paired with another Dolby sound processor model†). We designed the DSS200 to be serviced easily. The unit slides out from the rack on rails, and the top lifts up for easy access to the hardware inside.

The custom-designed media block, reprogrammable to accommodate future developments in image and sound formats, assures you the highest-quality picture and sound. For security’s sake, when the content is decoded, it is reencrypted before being passed on within secure hardware so pirates cannot reach valuable movie data.

Theatre personnel can run the show locally or remotely via the Dolby TMS software, which includes familiar transport controls and also allows central network control, easy setup, scheduling, and monitoring.

Reliability Features

Keep the Show Onscreen

- Dual redundant hot-swappable power supplies
- RAID 5 hard disk array with hot-swappable drives
- Hot-swappable cooling fans
- Maintains playback position in the event of a power failure
- Robust software design that isolates and prioritizes playback over all other activities

†CP500, CP65, CP200, CP45, or CP55
DOLBY Screen Server (DSS200)

**General**

**Image Decoding**
Purpose-designed digital cinema image decoder supports content in JPEG 2000 and MPEG-2 formats; JPEG 2000 maximum bit rate 250 Mbps; supported frame rates 2D at 24 and 48 fps, 3D at 24 fps; 2K or 4K content playback at progressive scan 2,048 x 1,080; MPEG-2 maximum bit rate 140 Mbps; supported frame rates 23.98, 24, 25, 29.97, 30 fps; progressive scan 1,920 x 1,080; MP@HL

**Packaging Format**
Supports MPEG Interop, JPEG Interop, and SMPTE packaging formats

**Audio Processing**
16-channel audio on 8 x AES/EBU balanced digital audio outputs

**Security**
2,048-bit RSA decryption for key delivery; 128-bit AES5 decryption for content; internal security manager for secure image and sound processing, SMPTE security logging, secure real-time clock; supports insertion of both video and audio watermarking; supports industry-standard key delivery messages (KDMs) and Ti™ CineLink™ II (Diffie-Hellman and TLS)

**Subtitles**
Supports TiCineCanvas™ and SMPTE 428-7-2007 subtitles

**Show Storage Capacity**
Over 1,300 GB (formatted) internal content storage, enough for 10 features at 130 GB

**Content Hard Disk Drives**
RAID 5 system for redundancy; user-serviceable, hot-swappable hard disk drives

**Power Requirements**
100–240 VAC; 50–60 Hz; 250 W; front-panel power switch, dual redundant power supply

**Dimensions and Weight**
3-U rackmount chassis; 686 x 483 x 133 mm (27 x 19 x 5.25 inches); net: 29.5 kg (65 lb)

**Environmental Conditions**
Operating 0°C–40°C (32°F–104°F), fan cooling, 20%–80% relative humidity (noncondensing)

**Automation Options**
Digital Failsafe option to enable “lights on” automation if playback stops; serial RS-232 port directly connects to cinema automation with serial control; Ethernet directly connects to cinema automation with Ethernet control

**Regulatory Notices**
UL, FCC, CE, and RoHS compliant

**Front Panel**

**Removable Media**
Industry-standard removable hard disk drive bay and DVD-ROM drive for content and key delivery

**Status LEDs**
Bicolor LEDs show status of power supply, temperature, and internal hard disk drives

**USB 2.0**
Type A connector for key or content delivery, optional keyboard/mouse input

**Monitor Output**
15-pin high-density female D-connector for optional VGA-compatible monitor to display user interface

**Rear Panel**

**USB 2.0**
Two type A connectors, for optional keyboard and mouse to operate user interface

**Network Connections**
Three RJ-45 female connectors: 10/100/1,000Base-T with auto detection for auditorium network, theatre network, and future expansion; 1,000Base-LC optical fiber (optional, for theatre network)

**Serial Data**
9-pin male D-connector, RS-232

**General Purpose Input/Output**
Digital Failsafe option to enable “lights on” automation if playback stops; possible future expansion

**Monitor Output**
15-pin high-density female D-connector for optional VGA-compatible monitor to display user interface

**Image Output**
Two BNC female connectors, 75Ω, HD-SDI per SMPTE 292M

**Digital Audio Output**
25-pin male D-connector, 16-channel output on 8 x AES/EBU balanced, 110Ω, transformer isolated, per AES3-1992

**Timecode Output**
BNC female connector, unbalanced, output impedance 50Ω per SMPTE 12M

**Video Reference Input/Output**
BNC female connector, can be switched between input and output; in output mode (the default), reference signal automatically matches the content being played
DOLBY Theatre Management System Software

Dolby Theatre Management System (TMS) software simplifies and streamlines digital screen operations. It gives theatre personnel and network operations centers (NOCs) comprehensive central control over all presentations—for a single screen, a large multiplex, or a system integrator’s entire network.

From ingesting content and moving it, even while playing, to drag-and-drop show assembly, Dolby TMS software features operational simplicity, at-a-glance monitoring, and comprehensive remote control. Dolby Theatre Management System software provides:

- **Monitor**: View-only screen that allows the user an at-a-glance status report of all auditoriums in the complex.
- **Control**: Gives the user manual control of each Dolby Screen Server from anywhere in the complex.
- **Content**: Allows the user to assemble entire shows (ads, trailers, cues, feature presentation) and manage or move content already loaded in the Dolby Screen Server, Dolby Show Library, or attached FTP storage servers.
- **Schedule**: Allows the user to schedule all shows in a complex using a monthly calendar and to review intermission durations to avoid scheduling errors. Complete daily and even weekly scheduling in a few minutes.
- **System**: Utilized during installation for configuring the entire system.

Web services now allow interoperability with third-party control systems, too. The playback system supports SMPTE draft-standard Closed Caption protocols, and the entire system can be upgraded remotely via your digital cinema network.

As an integral part of a networked Dolby Digital Cinema system, Dolby TMS software enables network control of up to three Dolby Screen Servers with no additional equipment. It also enables central network control of all the Dolby Screen Servers in a multiplex when deployed with a Dolby Show Library.

DOLBY Show Library (DSL100)

The Dolby Show Library (DSL100) is a high-capacity central server designed to facilitate the networking of a multiplex and meet its content storage needs. The Dolby Show Library acts as the heart of your digital cinema network, giving you the ability to load all content at one central location, then distribute files electronically to networked Dolby Digital Cinema systems within the multiplex. For full specifications on the Dolby Show Library, contact Dolby Laboratories or visit www.dolby.com/DSL100.
Installation Options: **CP750, DMA8Plus, NA10**

**CP750 Digital Cinema Processor**
The CP750 Digital Cinema Processor is a key part of Dolby's digital cinema solution, combining high performance, practical functionality, and legendary Dolby quality. It accommodates eight digital audio channels from any cinema server, three additional digital sources of preshow and alternative content, and an existing film sound processor. It can be updated, controlled, and monitored remotely via your circuit's Wide Area Network to ensure glitch-free presentations. Dolby Digital 5.1, Dolby Digital Surround EX®, Dolby Pro Logic®, and Dolby Pro Logic II decoding are also included to deliver the best in surround sound before and during the show.

**DMA8Plus Digital Media Adapter**
The Dolby DMA8Plus interfaces the Dolby Screen Server with a cinema’s existing sound processor. It decodes the original digital audio to six analog channels compatible with the Dolby CP200, CP45, CP55, CP65, CP500, and most other processors. It can also be used with a CP650 processor not equipped with a Cat. No. 790 digital input card (and is not needed for CP650s that are).

**NA10 Network Automation Interface**
The Dolby NA10 interfaces the Dolby Digital Cinema system with a cinema’s existing automation system, enabling fully automated digital content presentations. Lighting, curtain, masking, and audio format changes can be scheduled for each show via the Dolby TMS software; as the show plays, the NA10 converts these digital cues to the electrical signals necessary to trigger various automation functions.

**Digital Cinema Installation Kit**
(Cat. No. 899-CP650, Cat. No. 899-DMA8)
This kit includes such items as Ethernet cables, HD-SDI cables, digital audio cables, and Gigabit Ethernet switches (jumbo frame).

For full specifications on the CP750, DMA8Plus, and NA10, contact Dolby Laboratories.

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**REGULATORY NOTICES**
North America: These units comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules, and Industry Canada ICES-003 specifications. They are UL Listed for the US and Canada. Europe: These units comply with the requirements of Low Voltage Directive 73/23/EEC and EMC Directive 89/336/EEC and carry the CE marking accordingly.

**WARRANTY**
One-year limited, parts and labor; see disclaimer. Specifications subject to change without notice.

**DISCLAIMER OF WARRANTIES**
Equipment manufactured by Dolby Laboratories is warranted against defects in materials and workmanship for a period of one year from the date of purchase. There are no other express or implied warranties and no warranty of merchantability or fitness for a particular purpose, or of noninfringement of third-party rights (including, but not limited to, copyright and patent rights).

**LIMITATION OF LIABILITY**
It is understood and agreed that Dolby Laboratories’ liability, whether in contract, in tort, under any warranty, in negligence, or otherwise, shall not exceed the cost of repair or replacement of the defective components or accused infringing devices, and under no circumstances shall Dolby Laboratories be liable for incidental, special, direct, indirect, or consequential damages (including, but not limited to, damage to software or recorded audio or visual material), cost of defense, or loss of use, revenue, or profit, even if Dolby Laboratories or its agents have been advised, orally or in writing, of the possibility of such damages.