DP503
Two-Channel Digital Encoder

The Dolby DP503 is a two-channel encoder supporting Dolby AC-2, Dolby Digital, and MPEG-1 Layer II for T1, ISDN, and Dolby Fax applications.

Providing unmatched flexibility and interconnectivity, the Dolby® DP503 is ideal for telecommunications applications requiring high audio quality at efficient data rates. Uses include studio interconnection via T1 and ISDN (for remote recording and postproduction applications for Dolby Fax) and other satellite systems applications.

The DP503 supports Dolby AC-2, Dolby Digital, and MPEG-1 Layer II algorithms at data rates from 40 to 448 kbps. Dolby Fax and ISDN applications require the use of Dolby AC-2 at 256 kbps and a 48 kHz sampling rate. Dolby Digital (AC-3)* supports mono, dual-mono, and stereo formats at 32, 44.1, or 48 kHz sampling rates; MPEG-1 Layer II supports single-channel, dual-mono (stereo), and joint-stereo formats at 32, 44.1, or 48 kHz sampling rates.

Synchronization is derived from either a user-provided external clock or the unit's own internal clock. Input audio, either PCM or analog, is processed by the user-selected algorithm and formatted with timing information into a single serial RS-449 output stream at the chosen data rate.

Front-panel system status indicators and rear-panel logic-level tallies are both provided, as well as an internal test-tone generator for system setup and troubleshooting. For monitoring and other applications, our complementary decoder unit, the Dolby DP524, supports the same algorithms and data rates.

* Not suitable for new broadcast facilities requiring the latest version of the Dolby Digital (AC-3) codec.

Dolby DP503 Two-Channel Digital Encoder

DP503 Front Panel

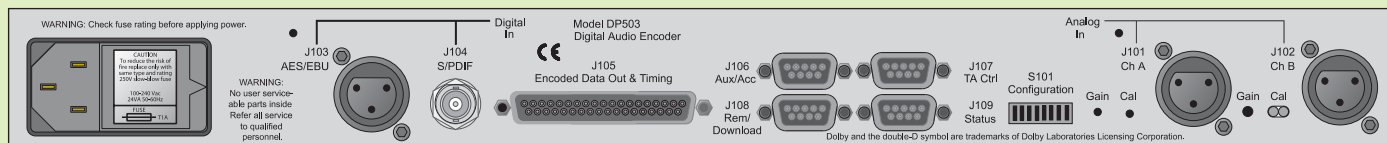**Display**
16-character LCD for status indication

LED Status Indicators
Test, Digital, Remote, ISDN Setup, Loopback, Cal, Overload, Fault, Lock, and Shift

Control Keys
For selecting algorithm, menu navigation, setup, and calibration

DP503 Rear Panel

Digital Audio Inputs
AES/EBU: 3-pin female XLR, 110Ω ±5%; 2–7 Vp-p required per ANSI S4.40-1992 S/PDIF: BNC female connector, unbalanced, 75Ω ±5%, 0.2 Vp-p minimum required per IEC60958

Analog Audio Inputs
3-pin female XLR, active balanced input, selectable 10 kΩ or 600Ω; peak level adjustable from +4 to +24 dBu (0 dBu = 0.775 V_{RMS}); CMRR >55 dB, 50 Hz–10 kHz

Encoded Data Out and Timing
RS-449, 37-pin male D-connector

Status Port
9-pin male D-connector; TTL level outputs

Auxiliary Data Inputs
Three RS-232, 9-pin female D-connectors for Aux Data, ISDN terminal adapter control, and remote control/software upgrade

Rear-Panel Switches
Select operational modes: Unit address (0–31), Normal/Download mode, data rate for download, and remote control

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Audio Coding Algorithm
Dolby AC-2, Dolby Digital (AC-3), and MPEG-1 Layer II

Audio Sampling Rates
32, 44.1, 48 kHz, selectable (except for Dolby AC-2, 48 kHz only)

Frequency Response
Lower limit: 20 Hz, ±0.25 dB
Upper limit varies with data rate

Distortion[†]
Dolby Digital: <0.01% at 1 kHz; <0.02%, 20 Hz to upper response limit
Dolby AC-2, MPEG-1 Layer II: <0.1% at 1 kHz; <0.2%, 20 Hz to upper limit

Dynamic Range
>100 dB

Level Stability
Better than 0.2 dB

Dolby Surround Compatibility
Compatible with two-channel Dolby AC-2 and Dolby Digital algorithms; compatible with MPEG-1 Layer II in stereo mode

Time Delay—Encode/Decode

Dolby AC-2 (48 kHz Sample Rate)

Data Rate (kbps)	Delay (ms)
128/256	42
192/384	12

Dolby Digital (All Data Rates)

Sample Rate (kHz)	Delay (ms)
32	210
44.1	152
48	140

MPEG-1 Layer II (All Data Rates)

Sample Rate (kHz)	Delay (ms)
32	161
44.1	117
48	107

Data Clock
Internal: ±25 ppm, RS-422 output levels
External: ±100 ppm, RS-422 input levels

Test-Tone Generator
Digital equivalent of 1 kHz nominal sine wave at −18 dB, referenced to digital full-scale

Power Requirements
90–264 VAC, 50–60 Hz, auto-sensing, 20 W; unit is designed to operate from a centrally switched power source

Dimensions and Weight
1-U rackmount: 44 × 483 × 324 mm (1.75 × 19 × 12.75 inches)
Net: 4.8 kg (10.5 lb)

Environmental Requirements
Operating: 0° to 50°C (32° to 122°F), natural convection cooling
Nonoperating (storage): −40° to +70°C (−40° to 158°F)

Regulatory Notices
North America: This unit complies with the limits for a Class A digital device pursuant to Part 15 of the FCC rules. The unit also complies with Industry Canada ICES-003 Class A requirements, and 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; see disclaimer. Specifications subject to change without notice.

[†]Measured using an Audio Precision System One