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DOLBY DP503

DIGITAL ENCODER

DOLBY DP503 TWO-CHANNEL DIGITAL AUDIO ENCODER



Designed to provide unmatched flexibility and interconnectivity, the Dolby DP503 is a two-channel digital audio encoder unit supporting Dolby AC-2, Dolby Digital, and MPEG-1 LII algorithms at data rates from 40 to 448 kb/s. With Dolby Digital and MPEG-1 LII, the DP503 supports single-channel, dual-mono (stereo) and joint-stereo formats, at 32, 44.1, or 48 kHz sampling rates.

The DP503 is ideal for broadcast, production, and telecommunications applications requiring high audio quality at efficient data rates. Uses include studio interconnection via ISDN for remote recording and post-production applications (Dolby Fax™), broadcast remotes, and satellite systems.

The DP503 accepts one or two channels of digital audio via AES/EBU or S/PDIF audio inputs. Analog audio inputs with 20-bit A/D converters are also provided, as are RS-232 ports for such purposes as ISDN terminal adapter control, auxiliary data, remote control, or software upgrades.

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

Both front-panel system status indicators and rear-panel logic-level tallies are provided, as well as an internal test tone generator for system set-up and troubleshooting. For monitoring and other applications, a complementary decoder unit, the Dolby DP524, is available that supports the same algorithms and data rates.

Dolby

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About Dolby AC-2 and Dolby Digital

Dolby Laboratories' unique knowledge of psychoacoustics combined with advanced digital signal-processing techniques has resulted in two highly-regarded perceptual coding algorithms, Dolby AC-2 and Dolby Digital (AC-3).

With its very high audio transparency and low time delay, Dolby AC-2 is ideally suited for professional, industrial, and broadcast applications. It forms the basis of the Dolby Fax™ system widely used by the film and music industries for remote recording and post-production applications.

Originally conceived as an ultra-efficient multichannel coding system, Dolby Digital was introduced in 1992 to provide digital surround sound in the cinema. Due to its combination of high quality, efficiency, and flexibility, it has since been adopted—in two-channel or multichannel form—for laser disc, DVD, and DVD-ROM, digital television broadcasting, digital cable, and DBS systems.

Dolby AC-2: 48kHz sample rate only

Total Data Rate (kbps)	Channels†	Aux Data Rate (bps)
128‡, 192	1	600
256, 384	2	1200

Dolby Digital: Selectable 32kHz, 44.1kHz, 48kHz sample rates

Total Data Rate (kbps)	Channels†	Aux Data Rate (bps)
40, 48, 56	1	0, 1200
64, 80	1 or 2	0, 1200, 2400*
96, 112, 128, 160, 192, 224, 256, 320	1 or 2	0, 1200, 2400*, 9600*
384, 448	2	0, 1200, 2400, 9600

MPEG-1 LII: Selectable 32kHz, 44.1 kHz, 48 kHz sample rates

Total Data Rate (kbps)	Channels†	Aux Data Rate (bps)
48, 56	1	0, 1200, 2400, 9600
64	1 or 2	0, 1200, 2400, 9600
80	1	0, 1200, 2400, 9600
96, 112, 128, 160, 192	1 or 2	0, 1200, 2400, 9600
224, 256, 320, 384	2	0, 1200, 2400, 9600

*One-channel mode only
†Two-channel designation permits both dual-mono (stereo) or joint-stereo operation
‡Supported only on Dolby DP503, DP523, and DP524 units.

DP503 Specifications

Audio Coding Algorithm
Dolby AC-2, Dolby Digital (AC-3), and MPEG-1 LII.

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

Distortion[1]
Dolby Digital: Less than 0.01% at 1 kHz; less than 0.02% 20 Hz to upper response limit.
Dolby AC-2, MPEG-1 LII: Less than 0.1% at 1 kHz; less than 0.2% 20 Hz to upper limit.

Dynamic Range
Greater than 100 dB.

Level Stability
Better than 0.2 dB.

Dolby Surround Compatibility
Compatibile with two-channel Dolby AC-2 and Dolby Digital algorithms.

Time Delay-Encode/Decode
Dolby AC-2 (48 kHz sample rate)

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

Dolby Digital (AC-3) (all data rates)

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

MPEG-1 LII (all data rates)

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

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

Audio Inputs
AES/EBU: 3-pin female XLR, 110 Ω ±5%; 2–7 Vpp required per ANSI S4.40-1992.
S/PDIF: BNC female connector, unbalanced, 75 Ω ±5%, 0.2 Vpp minimum required per IEC958.
Analog: 3-pin female XLR, active balanced input, selectable 10 k or 600 Ω. Peak level adjustable from +4 dBu to +24 dBu (0 dBu = 0.775 Vrms). CMRR >55 dB, 50 Hz-10 kHz.
Test tone: reference level is 18 dB below digital full scale.

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

Status Outputs
TTL level outputs; 9-pin male D connector.

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

Encoded Data Out and Timing
RS-449 type DT; 37-pin male D connector.

Front-Panel Controls and Indicators
16-character LCD with control keys, LED status indicators for valid data in, Cal level, Lock, Remote, A, Cal B, Overload, Loopback, ISDN Setup.

Test Tone Generator
Digital equivalent of 1 kHz nominal sinewave at -18 dB referenced to digital full scale.

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

Power Requirements
90–264 VAC, 50–60 Hz, 20 W.

Dimensions and Weight
One rack unit: 44 x 483 x 324 mm (1.75" x 19" x 12.75"). Net: 4.8 kg (10.5 lbs).

Environmental Requirements
Operating: 0°–50° C, natural convection cooling.
Non-operating (storage): -40°–70° C.

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. The unit is UL Listed for both U.S. 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.

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.

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 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), 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.

Specifications subject to change without notice.
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[1] Measured using an Audio Precision System One®

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