

SONY

PORTABLE,  
DIGITAL  
RECORDER



Actual size

# PCM-D1

Portable Linear PCM Recorder

AUDIO **refined;**  
COOL **redefined.**

**PCM-D1 PORTABLE LINEAR PCM RECORDER**



The PCM-D1 Portable Linear PCM Recorder takes mobile recording beyond the boundaries of typical field recording, making it the ideal choice for capturing live musical or theatrical performances, for recording sound effects, or for journalists in the field. With built-in, highly sensitive, electret condenser microphones; a circuit design that processes stereo sound with virtually no extraneous noise; and 96 kHz 24-bit recording quality, this recorder is capable of capturing even the most subtle performance nuances. Convenience features such as a 4 GB internal Flash Memory, a slot for

Memory Stick PRO™ (High Speed) storage media, a USB port, four AA size nickel metal hydride rechargeable batteries, and a battery charger make this unit super-equipped for field recording. Free of drive mechanisms, this lightweight, portable, and rugged recorder is audio refined – and cool redefined.



Sample Rate and Quantization	256 MB MS Pro (HS)	512 MB MS Pro (HS)	1 GB MS Pro (HS)	2 GB MS Pro (HS)	4 GB MS Pro (HS)	4GB Int. Flash Mem
22.05 kHz, 16-bit	45 min	1 hr 30 min	3 hr 5 min	6 hr 25 min	12 hr 45 min	13 hr 10 min
44.1 kHz, 16-bit	20 min	45 min	1 hr 30 min	3 hr 10 min	6 hr 20 min	6 hr 20 min
44.1 kHz, 24-bit	15 min	30 min	1 hr	2 hr 5 min	4 hr 15 min	4 hr 15 min
48 kHz, 16-bit	20 min	40 min	1 hr 25 min	2 hr 55 min	5 hr 50 min	6 hr
48 kHz, 24-bit	10 min	25 min	55 min	1 hr 55 min	3 hr 50 min	4 hr
96 kHz, 16-bit	10 min	20 min	40 min	1 hr 25 min	2 hr 55 min	3 hr
96kHz, 24-bit	5 min	10 min	25 min	55 min	1 hr 55 min	2 hr

\*Times noted are approximate.

**HIGHLIGHTS:**

- 96 kHz-24 bit, virtually noise-free, recording quality
- Built-in, X-Y configuration electret condenser microphones for superb stereo sound
- 4GB internal Flash Memory, free of drive mechanisms
- Slot for removable Memory Stick PRO (High Speed) storage
- Built-in USB 2.0 port, compatible with Macintosh® and Windows®/PC operating systems
- Four rechargeable nickel metal hydride AA batteries (battery charger included)
- Rugged titanium body with portable, lightweight design



**FEATURES AND BENEFITS**

**Built-in Electret Condenser Microphones**

The PCM-D1's electret condenser microphones have extraordinarily high sensitivity and low noise characteristics. All microphone casing parts fit together nearly seamlessly and are adjusted with 100-micron level precision. With a frequency response of nearly 30 kHz, the



microphones are positioned using an X-Y pattern and then angled toward each other with the left and right diaphragms close together, covering a wide sound range with reduced phase shifts. The result is rich audio with a natural sounding stereo image, good depth, and perspective.

**Superb Audio Signal Path**

The microphone amplifier provided for each channel is the Analog Devices, Inc. AD797, which boasts ultra-low noise and distortion. A variable gain circuit is adopted for amplitude control, which enhances the actual signal-to-noise ratio. The line amplifier provided for each channel is the Analog Devices AD8672. Analog and digital circuits are mounted on separate circuit boards and also separately powered to help prevent interference between circuit blocks. The analog circuit achieves superb linearity so that the recorded sound is output faithfully.

**Outstanding Construction Quality**

The circuitry of the PCM-D1 recorder is protected by a body made of 1 mm thick, pure titanium and covered with nitrate titanium, scratch-resistant coating – resulting in a finished titanium surface approximately ten times as hard as that of alumite treated aluminum. In addition, a distinctive arch-shaped polished stainless steel frame is provided

to protect the microphones from impact damage. This rugged exterior protects the PCM-D1's circuits and microphones and enhances the high sonic quality of the recorder.

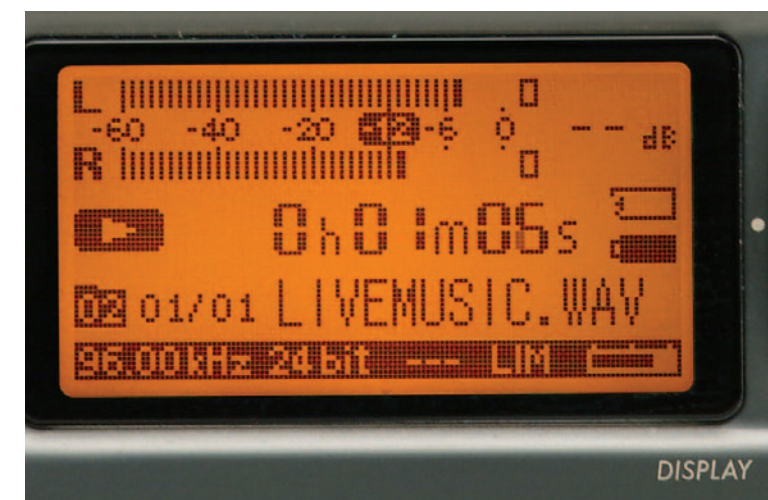


**Simple Uploading to Computer**

The PCM-D1 recorder conforms to the USB 2.0 Mass Storage Device standard. Because the recorder's native recording file format is .WAV, recordings can be rapidly uploaded to a computer and used in conjunction with most common audio production software.

**High Quality Signal Processing**

The PCM-D1 recorder offers comprehensive signal processing features for location recording including a unique limiter function, a 200 Hz high pass filter and SBM (Super Bit Mapping) noise shaping. The digital limiter uses an independent audio buffer that contains audio 20dB lower than the audio processed in the normal recording signal path. With the PCM-D1 limiter enabled, when a loud sound suddenly occurs during recording, the over level part of the sound is automatically set within the range of the maximum input level (from the alternative -20dB buffer) in order to help prevent distortion. While this limiter function won't compensate for clipping of audio that is suddenly in excess of 20 dB, the sonic purity of the recording is fully maintained without the need to apply conventional limiter signal processing techniques. With the High Pass Filter enabled, audio below 200 Hz is filtered out and not recorded. This function can be used to reduce noise caused by external sources such as wind, the flow of air-conditioning equipment, etc. With the SBM function enabled (optionally used for 16-bit recording modes), Super Bit Mapping significantly increases the dynamic range acoustically by reducing noise that is particularly easy to hear within the human audible band. To improve the audio quality when converting 20-bit data into 16-bit, the top bits of information within the lower data (usually discarded when recording in 16-bit mode) are integrated into the 16-bit data track by shifting audible noise up into an inaudible higher frequency range.



DISPLAY

## SPECIFICATIONS DETAIL

- **Built in Microphones** Electret condenser microphones mounted in X-Y configuration.  
High sensitivity (-32.0 dB /Pa 1 kHz);  
Maximum input level 130 dB SPL;  
Self noise level 20 dB SPL(A)
- **Recording Media** Built-in flash memory 4 GB, Memory Stick PRO (High Speed) media (Not Supplied), Stereo Recording
- **Sampling Rates** 22.05 kHz, 44.1 kHz, 48 kHz and 96 kHz
- **Quantization** 16-bit linear, 24-bit linear
- **Frequency Response (Line Input to Line Output)** For Fs = 22.05 kHz: Frequency Response = 20 Hz to 10 kHz;  
For Fs = 44.1 kHz: Frequency Response = 20 Hz to 20 kHz;  
For Fs = 48 kHz: Frequency Response = 20 Hz to 22 kHz;  
For Fs = 96 kHz: Frequency Response = 20 to 44 kHz
- **Signal-to-Noise Ratio (Line Input to Line Output)** 96 dB or greater (1 kHz IHF-A) when set to 24-bit
- **Total Harmonic Distortion (Line Input to Line Output)** 0.008% or below (1 kHz, 22 kHz LPF)
- **Wow and Flutter** Below measurable limit (less than +/-0.001% W.Peak)
- **Mic Input (Stereo Mini Jack)** Input impedance: 22 k ohm, Rated input level: 2.5 mV;  
Minimum input level: 0.7 mV
- **Headphone Output (Stereo Mini Jack)** Rated output level: 400 mV;  
Maximum output level: 30 mW + 30 mW or more;  
Load impedance: 16 ohms

## PCM-D1 Portable Linear PCM Recorder



- **Line Input (Stereo Mini Jack)** Input impedance: 47 K ohms;  
Rated input level: 2.0V;  
Minimum input level: 570 mV
- **Line Out/Optical Digital Output (Combination Stereo Mini and Optical Output Jack)** For Line Output Use = Output impedance: 220 ohms;  
Rated output level: 1.8V;  
Load impedance: 22 k ohm.  
For Optical Digital Output Use = Output level: -21dBm to -15 dBm;  
Emission wavelength: 630 nm to 690 nm
- **DC Input Jack** 6V
- **USB Connection** Hi-speed USB, Mass Storage Class;  
System requirements: Macintosh® OS Version 10.2.8 or later;  
Windows®/PC OS Windows XP Media Center Edition 2005 and 2004,  
Windows XP Professional, Windows XP Home Edition, Windows 2000 Professional (SP3 or later)
- **Memory Stick Slot** Memory Stick PRO (High Speed) media;  
NOTE: Standard Memory Stick media not supported
- **Power Requirements** DC IN 6V (AC 120V, 60Hz); Four AA size nickel metal hydride rechargeable batteries NH-AA (supplied); or Four AA size alkaline batteries (not supplied)
- **Power Consumption** 2.1W
- **Dimensions** 2 7/8" x 7 5/8" x 1 5/16" (w x h x d) not including projecting parts and controls
- **Weight** 18.52 oz (including batteries)
- **Approximate Battery Life**

Battery Type	96kHz 24-bit	44.1kHz 16-bit
Nickel Metal Hydride	4.0 hrs	5.0 hrs
Alkaline	2.0 hrs	2.0 hrs

**SONY**

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