

DM100 Bitstream Analyzer Quick Start Guide

Monitor Modes

The DM100 allows for the monitoring of individual channels within an input bitstream, as well as a downmix to a stereo (Lt/Rt, Lo/Ro) or mono output. This is controlled in the Output Ch Map menu.

Decode Format (Autodetect): Identifies and decodes the incoming data stream automatically. When the DM100 is not in Autodetect mode, a flashing LED (Dolby® Digital, Dolby E, or PCM) indicates that the incoming data stream does not match the chosen decode mode.

Dolby E Monitoring: In addition to downmixing, the DM100 allows the metadata parameter dialnorm to be applied to content being decoded with Dolby E. This unique feature allows the user to test this important parameter prior to Dolby Digital encoding, providing a safeguard against improper metadata authoring.

Dolby Digital Monitoring: The DM100 can apply and monitor dynamic range control using the RF and Line mode profiles within the incoming Dolby Digital data stream. Line, RF, and Custom modes are provided under the DD Compression menu. Custom disables dynamic range compression, except when listening to a downmix.

Power-Up Functions

Factory Reset: Press and hold [Enter] during power-up; follow displayed instructions.

Software Upgrade: Press and hold [Setup] during power-up; press [Esc] to abort.

Dolby E (DE) Position

DE Guard Band
Line 14

DE Frame Rate
29.97 fps

When the DM100 is supplied with a video reference, the Dolby E MD status screens can display both Dolby E video frame rate and information about the position of the start of the Dolby E frame boundary. For seamless switching and editing of Dolby E bitstreams, it is important that the start of the Dolby E frame is correctly aligned to the video frame. The Dolby E frame is in danger of corruption if the measured DE position is less than 11 or greater than 30 lines for 29.97 fps (NTSC) bitstreams, or less than 7 and greater than 35 lines for 25 fps (PAL) bitstreams.

Timecode/TS Delay Word

The DM100 displays the timecode and time stamp delay word from the incoming bitstreams. The time stamp delay word is a setting within a Dolby Digital encoder that carries delay information to downstream devices, such as broadcast transmission equipment. The delay word is displayed in milliseconds, where a positive value indicates an advance and a negative value, a delay.

Channel Status Bit Modification

The DM100 is capable of changing status bits present in the first and third bytes of the AES channel status data. This feature can override improperly authored audio streams. This allows any equipment that may view such bits as illegal to accept AES3 streams and to allow equipment testing. When changing AES3 status bits, the selected decode mode LED flashes slowly.

AES3 Mode: Professional/Consumer bit.

Audio Mode: Audio/Non-Audio bit.

Pro Emphasis: J.17/50/15-us Emphasis bit. (Reserved bits are included for future functionality.)

Pro Freq Mode: Locked/Unlocked bit.

Pro/Consumer Sample Freq: 32/44.1/48 kHz bit.

Consumer Copyright: Yes/No bit.

Consumer Additional Info: Pre-Emphasis bit.

Pass Through All: All AES status bits pass through the DM100 unchanged.

Level Display Functions

The input level for each audio channel, as well as Dynamic Range Control levels for Dolby Digital Line and RF modes, can be displayed in numeric (default) or bar graph form. While in numeric display mode, the DM100 displays levels for both RMS (on the left) and peak (on the right) of the selected channel. To toggle between a numeric or bar graph display, press [Enter] when viewing the appropriate status screen. All status level displays remain in the last mode selected.

Generator Modes

The DM100 is capable of storing and generating a number of test signals. The DM100's output can be locked to internal 48 kHz clock, the digital input, or 48 kHz derived from the reference video input. Depending on the type of test signal selected, some setup menus may be hidden.

PCM: Pink Noise, White Noise, Sine, Square, and Silence (AES Black) waveforms. Amplitude is adjustable on all PCM waveforms (except silence), and the frequency of sine signals can be fixed or swept over a maximum of ten seconds. The PCM stream can be carried on either or both channels of an AES pair.

Hint: Pressing [Shift] increases frequency in 1,000 Hz steps.

Dolby Digital/Dolby E Streams: Up to 200 bitstreams can be stored in the unit at one time. The supplied CD-ROM contains several thousand additional bitstreams which can be uploaded into the DM100. When generating Dolby E streams, the clock should be referenced to video.

DE Position: Sets the video line number where the internally generated Dolby E test stream begins.

DD Ch Select: Allows the internally generated Dolby Digital stream to be carried on either or both channels of an AES pair.

Latency Measurement Mode

The DM100 can measure the latency of audio equipment. At user-defined intervals, the DM100 generates a short burst of white noise, and measures the time it takes for the signal to return. To perform this measurement, select Latency Test from the Gen Control/Output Mode setup menu. Connect the DM100's Digital Out to the equipment to be measured, and the output of that equipment to the DM100's Digital In. The time interval between the noise bursts can be set in the Gen Control/Noise Burst Rate setup menu. The measured latency can then be read in the Generator status menu. Press [Enter] to display the measured latency in either audio samples or milliseconds.

Audio/Video Frequency Drift Mode

The DM100 can determine if an AES digital audio or reference signal is frequency-locked to a video black burst reference signal. The unit locks to the video reference, then measures the frequency difference between the Digital In and the video reference. To perform this measurement, select A/V Freq Drift from the Gen Control/Output Mode setup menu. Connect a 29.97 or 25 fps video reference to the DM100's V Ref input, and the test AES signal to the DM100's Digital In. The measured frequency drift between the AES and video signals can be read in the Generator status menu as a continuous counter. The display counts the frequency difference in AES samples: a positive number indicates the AES input signal is faster than the video reference. Therefore, if the two signals are locked, the display will read "0 samples." Pressing [Enter] resets the counter.

SMPTE 337M Status

The AES3 Status/337M Status menu contains information about the headers used to identify non-audio bitstreams in AES3 signals. Pa Alignment indicates the channel (Left or Right) where the header begins. The Error Stats/Pa Alignment menu counts the number of times the alignment is in error. Pa Spacing measures the number of AES3 samples between successive headers. Correct values should be constant—Dolby Digital: 1536; Dolby E (NTSC): 1601/2; Dolby E (PAL): 1920.

Logging Mode

When the Logging Output is enabled, a subset of DM100 status values is output as ASCII text from the RS-232 port. A standard terminal program can display this. In addition, the currently selected status menu item is output.

Mon/Gen Buttons

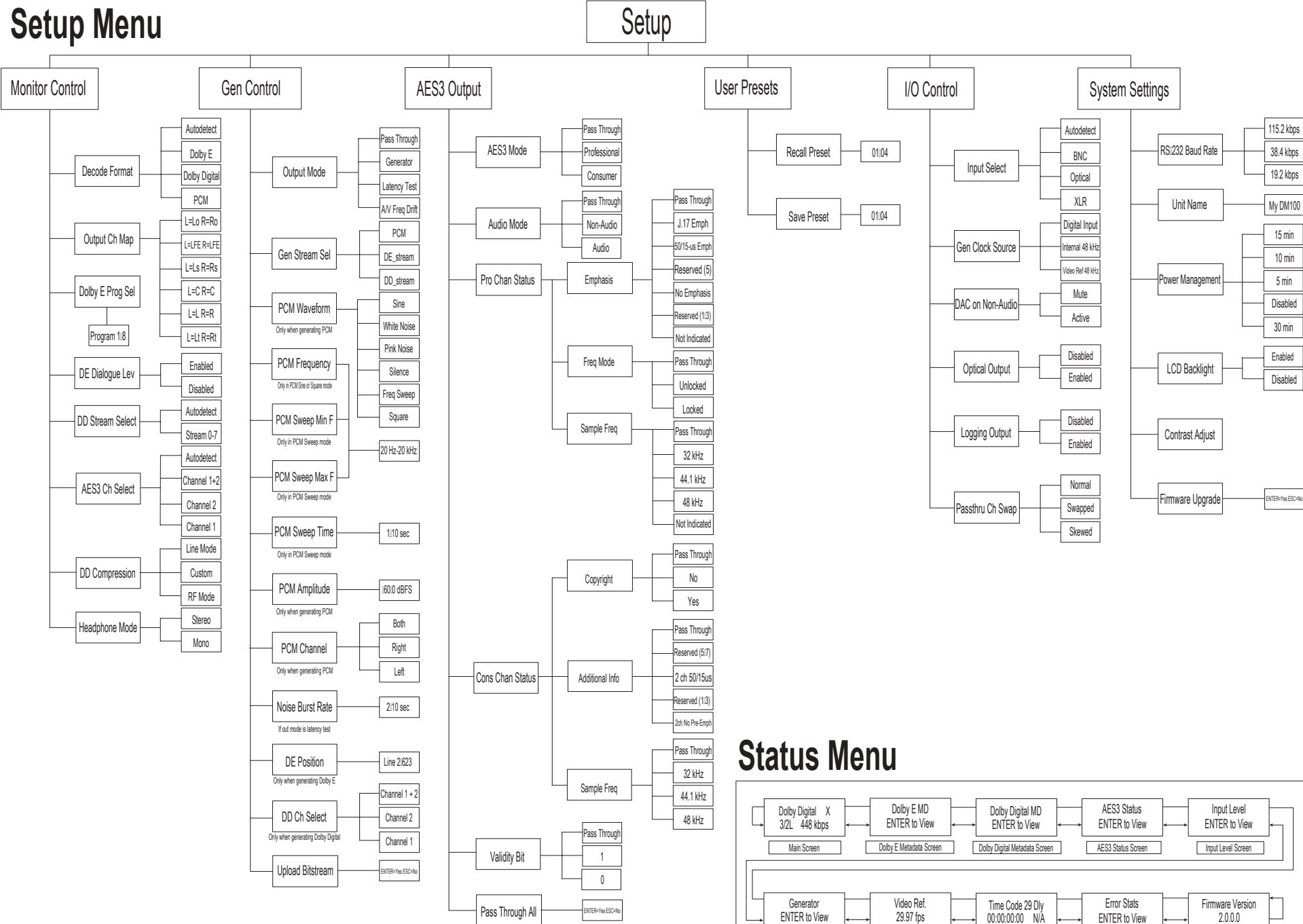
Mon: Resets internal settings to quickly allow monitoring of input streams.

Gen: Turns the generator on and brings up the Gen Stream Sel menu.



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Setup Menu



Status Menu

Dolby Digital X 3/2L 448 kbps

Dolby E MD ENTER to View

Dolby Digital MD ENTER to View

AES3 Status ENTER to View

Input Level ENTER to View

Main Screen

Dolby E Metadata Screen

Dolby Digital Metadata Screen

AES3 Status Screen

Input Level Screen

Generator ENTER to View

Video Ref. 29.97 fps

Time Code 29 Dly 00:00:00:00 N/A

Error Stats ENTER to View

Firmware Version 2.0.0.0

Generator Status Screen

Video Frame Rate Screen

Time Code Screen

Error Stats Screen

Firmware Version Screen