

**Multimedia PC Marketing Council  
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**Multimedia PC Level 2 Specification -**



Introduction

The Multimedia PC Marketing Council, Inc. has developed a second-level multimedia computer specification to encourage the adoption of enhanced multimedia capabilities. This specification is a backwardly compatible superset of the MPC Level 1 Specification, which continues in full effect. This Specification defines the minimum system functionality for Level 2 compliance but is not intended as a recommendation for a particular system configuration.

Hardware Specifications

CPU - Minimum requirement: 25 Mhz 486SX (or compatible) microprocessor.

RAM - Minimum requirement: 4 megabytes of RAM (8 megabytes recommended).

Magnetic Storage- Requirement: 3.5" high density (1.44 MB) floppy disk drive.  
Requirement: 160 MB or larger hard drive.

Optical Storage - Requirements:

- CD-ROM drive capable of sustained 300 KB/sec transfer rate
- No more than 40% of the CPU bandwidth may be consumed when maintaining a sustained transfer rate of 150 KB/sec
- Average seek time of 400 milliseconds or less
- 10,000 hours MTBF
- CD-ROM XA ready (mode 1 capable, mode 2 form 1 capable, mode 2 form 2 capable)
- Multisession capable
- MSCDEX 2.2 driver or equivalent that implements the extended audio APIs
- Subchannel Q support (P, R-W optional)

At 300 KB/sec sustained transfer rate it is recommended that no more than 60% of the CPU bandwidth be consumed.

It is recommended that the CPU utilization requirement and recommendation be achieved for read block sizes no less than 16K and lead time of no more than is required to load the CD-ROM buffer with 1 read block of data.

It is recommended that the drive have on-board buffers of 64KB and implement read-ahead buffering.

Audio - Requirements:

- CD-ROM drive with CD-DA (Red Book) outputs and volume control.
- 16-bit Digital-to-Analog Converter (DAC) with: Linear PCM sampling; DMA or FIFO buffered transfer capability with interrupt on buffer empty; 44.1, 22.05 and 11.025 kHz sample rate mandatory; stereo channels; no more than 10% of the CPU bandwidth required to output 22.05 and 11.025 kHz; it is recommended that no more than 15% of the CPU bandwidth be required to output 44.1 kHz.
- 16 bit Analog-to-Digital Converter (ADC) with: Linear PCM sampling; 44.1, 22.05,

with and 11.025 kHz sample rate mandatory; DMA or FIFO buffered transfer capability

interrupt on buffer full; microphone input.

Internal synthesizer capabilities with multi-voice, multi-timbral capacity , 6 simultaneous melody notes plus 2 simultaneous percussive notes.

Internal mixing capabilities to combine input from three (recommended four) sources and present the output as a stereo, line-level audio signal at the back panel. The four sources are: CD Red Book, synthesizer, DAC (waveform), and (recommended but not

required) an auxiliary input source. Each input must have at least a 3-bit volume control (8 steps) with a logarithmic taper. (4-bit or greater volume control is strongly recommended.) If all sources are sourced with -10dB (consumer line level: 1 milliwatt into 600 ohms=0dB) without attenuation, the mixer will not clip and will output between 0 dB and +3 dB. Individual audio source and master digital volume control registers and extra line-level audio sources are highly recommended.

CD-ROM XA audio capability is recommended.

Support for the IMA adopted ADPCM software algorithm is recommended.

(Guidelines for synthesizer implementation available on request.)

Video - Requirement:

Color monitor with display resolution of 640x480 with 65,536 (64K) colors.

The recommended performance goal for VGA+ adapters is to be able to blit 1, 4, and 8 bit-per-pixel DIBs (device independent bitmaps) at 1.2 megapixels/second given 40% of the CPU. This recommendation applies to run-length encoded images and non-encoded images. The recommended performance is needed to fully support demanding multimedia applications including the delivery of video with 320 x 240 resolution at 15 frames/second and 256 colors.

User Input -

Requirement: Standard 101 key IBM-style keyboard with standard DIN connector, or keyboard which delivers identical functionality utilizing key-combinations.

Requirement: Two-button mouse with bus or serial connector, with at least one additional communication port remaining free.

I/O - Requirement: Standard 9-pin or 25-pin asynchronous serial port, programmable up to 9600 baud, switchable interrupt channel.

Requirement: Standard 25-pin bi-directional parallel port with interrupt capability.

Requirement: 1 MIDI port with In, Out, and Thru, must have interrupt support for input and FIFO transfer.

Requirement: IBM style analog or digital joystick port.

System Software

Multimedia PC system software must offer binary compatibility with Windows 3.0 plus Multimedia Extensions or Windows 3.1

Minimum Full System Configuration

A full Multimedia PC Level 2 system requires the following elements and components, all of which must meet the full functional specifications outlined above:

CPU 25 MH 486SX or compatible microprocessor

RAM 4 megabytes of RAM (8 megabytes recommended)

Magnetic Storage Floppy drive, hard drive (160 MB minimum)  
Optical Storage CD-ROM doublespeed with CD-DA outputs, XA ready, multisession capable  
Audio 16 bit DAC, 16 bit ADC, music synthesizer, on-board analog audio mixing  
Video Display resolution of at least 640x480 with 65,536 (64K) colors  
Input 101 key Keyboard (or functional equivalent), two button mouse  
I/O Serial port, parallel port, MIDI I/O port, joystick port  
System Software Binary compatibility with Windows 3.0 plus Multimedia Extensions or  
Windows 3.1

#### Minimum Upgrade Kit Configuration

A Multimedia PC Level 2 Upgrade Kit requires the following elements and components, all of which must meet the full functional specifications outlined above:

Optical Storage CD-ROM doublespeed with CD-DA outputs, XA ready, multisession capable  
Audio 16 bit DAC, 16 bit ADC, music synthesizer, on-board analog audio mixing  
I/O MIDI I/O port, joystick port

(Providing system software with Upgrade Kits is optional.)