

PLAYBACK COMPATIBILITY LIST

General Information

USB

USB Standards	1.0	Y	
	1.1	Y	
	2.0	Y	
	3.0	N	
File systems	FAT 16 (standard)	N	
	FAT 32	Y	
	exFAT	N	
	NTFS	N	
	HPFS	N	
	ext2, ext3, ext4	N	
USB speed classifications	Low_Speed, 1,5 Mbit/s (187,5 KB/s)	Y	
	Full_Speed, 12 Mbit/s (1.5 MB/s)	Y	
	High_Speed, 480 Mbit (60MB/s)	Y	
	Super_Speed, 5 Gbit/s (625 MB/s)	N	
USB power management	Operating-Power Mode, constant current output	Y	max. 500mA
ZENEC USB-HUB	For max. three 2.0 USB-drivers + one iPod connection port	Y	



SD

SD standards	SD standard	Y	
	SDHC	Y	up to 32GB
	SDXC	N	
File systems	FAT 16 (standard)	N	
	FAT 32	Y	
	exFAT	N	
	NTFS	N	
	HPFS	N	
	ext2, ext3, ext4	N	
SD card speed classifications	Class 2, 16 Mbit/s (2MB/s)	Y	
	Class 4, 32 Mbit/s (4MB/S)	Y	
	Class 6, 48 Mbit/s (6MB/s)	Y	
	Class 10, 80 Mbit/s (10MB/s)	N	



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General Information

Apple portable player

iPod Nano	5G	Y	AC/V/LF
	6G	Y	AC/V/LF
	7G	Y	AC/LF
iPod	Classic	Y	AC/V/LF
iPod Touch	3G	Y	AC/V/LF
	4G	Y	AC/V/LF
	5G	Y	AC/LF
iPhone	3GS	Y	AC/V/LF
	4G/4S	Y	AC/V/LF
	5/5S/5C	Y	AC/LF
	6/6 Plus	Y	AC/LF
iPad	16GB WiFi	N	
	32GB WiFi	N	
	64GB WiFi	N	
	16GB WiFi + 3G	N	
	32GB WiFi + 3G	N	
	64GB WiFi + 3G	N	



AC Audi control via touchscreen VC Video control via touchscre V Video without touchscreen control
 LF (Battery) Loading function NL No loading function



All information to be valid at date of creation/publishing, without extended liability to guarante future compliance/functionally with Apple-Hardware and forthcoming iOS firmware updates,

PLAYBACK COMPATIBILITY LIST

Please note:




- For media formats listed herein and especially for file extensions not explicitly listed: File extensions not listed are either not playable at all, or cause a severely impaired playback performance.
- Manually overwritten file extensions will not cause the file to become playable, but instead such manual interaction may cause loud digital decoding noise on the speaker outputs or may even crash the device, in the worst case.
- Files that contain any kind digital watermark, DRM header or general copy protection cannot be played back.
- MP3 and AVI files created with non-compliant encoder settings are prone to cause audio dropouts and/or stuttering picture performance.
- Extension of existing file extension standards and definitions can cause incompatibilities in the future, because the software decoders implemented on device are of licensed type as is, and thus memory resident by nature.
- After device start-up and during periods of increased CPU load, audio and video file playback can be affected by brief audio dropouts.
- In particular, USB mass storage devices must be formatted correctly before use. Read-in and track list processing times can be adversely affected by the memory controller resident on the mass storage device.
- In addition, even USB mass storage devices that seem to work well during initial empirical testing can still show sluggish performance and audio playback related issues, no matter if all files loaded on the storage device are of compliant format.

File allocation limitations

Source	USB 2.0 	SD 
Max. number of total files on Device	20000	20000
Max. number files per folder	400	400
Max. number of folders	400	400
Max. number of stacked folder layers	8	8
Max. supported single file size AUDIO	2GB	2GB
Max. supported single file size VIDEO	4GB	4GB
guaranteed supported size of Massstorage Device	32GB	8GB
Max. characters for filename	200	200
Max. character for foldername	200	200

Supported AUDIO formats

Compatibility with digital audio files

Source	USB 	SD 	iPod 
MP3 (MPEG-1 Audio Layer 3)	Y	Y	by iPod
WAV (Waveform Audio File Format)	Y	Y	by iPod
WMA (Windows Media Audio)	Y	Y	by iPod
AAC (Advanced Audio Coding)	Y	Y	by iPod
OGG (Vobis)	Y	Y	by iPod
A/52 & AC3 ATSC (Dolby Digital - Advanced Television System Committee)	N	N	by iPod
FLAC (Free Lossless Audio Codec)	N	N	by iPod
ALAC (Apple Loss Audio Codec)	N	N	by iPod
MAC (Monkey's Audio Codec)	N	N	by iPod
ATRAC /ATRAC 3 (Adaptive Transform)	N	N	by iPod
AIFF (AUDIO Interchange File Format)	N	N	by iPod
RA (Real Audio)	N	N	by iPod

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Supported AUDIO formats

Extended compatibility USB & SD

MP3		Bit Rate	32/320	kbps (MIN/MAX)	
		Variable Bit Rate	Y		
		Sampling Frequency	32/48	kHz (MIN/MAX)	
		Joint Stereo	Y		
		DRM files	N		
	ID3 Tag Version		<2.3	V2.3	V2.4
	Text encoding	UTF 8	N/A	N	Y
		UTF 16 LE	N/A	Y	Y
		UTF 16 BE	N/A	Y	Y
		ASCII	N/A	N/A	N/A
		ASCII ISO 8859	N/A	N/A	N/A
		CD Text (ISO 8859-1)	N/A	N/A	N/A




WMA		Bit Rate	64/192	kbps (MIN/MAX)	
		Variable Bit Rate	Y		
		Sampling Frequency	32/48	kHz (MIN/MAX)	
		Multi Channel	N		
		Professional	N		
		Lossless	Y		
		Voices	N		
		DRM files	N		
	ID3 Tag Version		<2.3	V2.3	V2.4
	Text encoding	UTF 8	N/A	N	Y
		UTF 16 LE	N/A	Y	Y
		UTF 16 BE	N/A	Y	Y
ASCII		N/A	N/A	N/A	
CD Text (ISO 8859-1)		N/A	N/A	N/A	

AAC		Variable Bitrate	16/320	kbps (MIN/MAX)	
		Sampling Frequency	32/48		
		.m4a	Y	kHz (MIN/MAX)	
		.m4p	N		
		DRM files	N		
		2 Channel (Stereo)	Y		
		Multi Channel	N		
	Album art	Y			
	ID3 Tag Version		<2.3	V2.3	V2.4
	Text encoding	UTF 8	N/A	N	Y
		UTF 16 LE	N/A	Y	Y
		UTF 16 BE	N/A	Y	Y
ASCII		N/A	N/A	N/A	
CD Text (ISO 8859-1)		N/A	N/A	N/A	

PLAYBACK COMPATIBILITY LIST

Supported VIDEO/pic formats

Compatibility with digital video and picture files

Source	USB 	SD 	iPod 	limitations
.cda	N	N	by iPod	
.amc	N	N	by iPod	
.asf	Y	Y	by iPod	X
.avi	Y	Y	by iPod	X
.avi (xvid)	Y	Y	by iPod	X
.bin	N	N	by iPod	
.dat	N	N	by iPod	
.dif	N	N	by iPod	
.div	Y	Y	by iPod	X
.divx	N	N	by iPod	
.dmv	N	N	by iPod	
.dvx	N	N	by iPod	
.gvi	N	N	by iPod	
.m2v	N	N	by iPod	
.m4a	Y	Y	by iPod	
.m4b	N	N	by iPod	
.m4p	N	N	by iPod	
.m4v	Y	Y	by iPod	
.mka	N	N	by iPod	
.mkv	N	N	by iPod	
.mk3d	N	N	by iPod	
.mov	N	N	by iPod	
.mp4	Y	Y	by iPod	X
.mp4v	Y	Y	by iPod	X
.mpg	Y	Y	by iPod	X
.mpeg	Y	Y	by iPod	X
.mpeg1	Y	Y	by iPod	X
.mpeg2	Y	Y	by iPod	X
.mpeg4	Y	Y	by iPod	X
.ogv	N	N	by iPod	
.qt	N	N	by iPod	
.vob	N	N	by iPod	
.wav	Y	Y	by iPod	X
.xvid	N	N	by iPod	

AVI	Encoded in PAL	low resolution	Y	352 x 288 (x25F)
		high resolution	Y	720 x 576 (x25F)
		other resolution	N	
	Encoded in NTSC	low resolution	Y	352 x 240 (x30F)
		high resolution	Y	720 x 480 (x30F)
		other resolution	N	

ZENEC-Fullscreen additional information

Videocontainer	Codec	TV-Standards (Formate)	ZENEC Fullscreen	Image Resolution	
mp4	Xvid	Encoded in PAL	High resolution	Y	800 x 480
		Encoded in NTSC	High resolution	Y	800 x 480
mp4	mpeg 4	Encoded in PAL	High resolution	Y	800 x 480
		Encoded in NTSC	High resolution	Y	800 x 480
AVI	mpeg 4 (Xvid)	Encoded in PAL	High resolution	Y	800 x 480
		Encoded in NTSC	High resolution	Y	800 x 480

Limitation Disclaimer:

These file extensions are typical container files. Since container do not describe how data or metadata are encoded, the system might not be able to identify and decode the contained data.