



A Guide to Digital Download File Formats

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There are many different types of digital download file formats and a newcomer to the world of digital downloads may well get confused about what all the various terminologies mean, what the difference is between the formats and which is the best to use in downloading your music. Here we provide you with a quick guide to this bewildering world and tell you what your best options are in regarding what format to download and rip your music.

What are the different types of digital download?

There are a number of different formats for digital downloading. Each is distinguished from the others by the way it encodes the data when a music file is either downloaded from the Passionato website or ripped from a CD on to the computer hard drive. This is important when you come to choose which type of music file you wish to keep your music collection in digitally, as it affects the sound quality of the playback reproduction and fidelity to the original sound source.

Music files can be separated into those which use “lossy” compression when converting the information into digital code and those that accept a ‘lossless’ conversion from source to the digital file format.

What is compression?

It may come as no surprise to learn that music – particularly classical music - contains a vast amount of information for a computer to digest. In order for a music file to be of a manageable size and not eat up vast amounts of precious storage space on a PC`s hard drive the technique of compression can be used. This means that the music data is literally squeezed into the smallest possible size of information necessary for a satisfactory playback experience. The amount of information stored by each file is measured by its bit-rate.

What is a bit-rate?

A bit-rate is the measurement (kbps) of how much information is processed per unit of time by each type of music file. The higher the bit-rate, the more of the original recording is stored leading to a better quality of reproduction. Conversely the lower the bit rate the lower the amount of information captured leading to a lower quality in reproduction; hence the term ‘lossy’ compression which is used to refer to this type of music file.

Which music files use compression?

The music files that use “lossy” compression (although not exclusively) are:

- MP3
- AAC
- WMA

What is compression?

The MP3 format is the most popular form of music file and the one most likely to be offered by music download websites. The ability to play MP3 across a wide variety of different players and the small demands it makes in terms of storage space on a hard drive make the MP3 a very attractive proposition.

MP3s can come in a wide variety of bit-rates: 128, 192, 256 and 320kbps, *(Continued)*

for example. As has been mentioned above, the higher the kbps the better quality the sound reproduction. To understand what we mean by this listen and compare the following examples of music encoded at the different bit-rates.




Test Files

The three files here are 60 second extracts at different bit-rates from Vernon Handley's acclaimed recording of the "Storm" from Britten's Four Sea Interludes – a great recording demonstration piece! The full album is available here.

[Click Here...](#)



To playback these samples simply click the link below:

-  [128k MP3 sample](#)
-  [320k MP3 sample](#)
-  [FLAC sample](#)

To download these files as a zip folder click here

NB: The MP3 samples should play directly in your browser, the FLAC file will need to be saved & played on a media player that can play FLAC

As hopefully can be heard, classical music, which possesses a wide dynamic range and an intricate amount of detail, requires the highest bitrates to ensure that as much of the musical content as possible is captured. Passionato ONLY uses the highest quality 320kbps across all the MP3s it offers, ensuring the best quality of MP3 playback reproduction.

AAC

AAC stands for Advanced Audio Copying and is an equivalent to the MP3. AAC is well known for its use by Apple in its iTunes store and iPod. The disadvantage of AAC is its relatively limited compatibility outside the iTunes setup.

WMA

Windows Media Audio was developed by Microsoft as part of its Windows Media Suite. Like MP3 and AAC it compresses music data. WMA also has limited compatibility with other media players – it is not compatible with iPods/iTunes, for example. Consequently few download stores offer this format.

Why does Passionato offer only MP3s for its 'lossy' compression downloads?

Passionato believes that MP3s universality, flexibility and using the high-bit rate of 320kbps make it the ideal choice for most users. Practically all computer media players, portable players like the iPod, and even car stereos that can play digital files will play MP3 files, so it is the closest format so far to a "universal" digital file format.

Lossless digital formats

What is a 'lossless' digital format?

The best audio reproduction is to be found in the use of lossless digital formats. As the term indicates it is designed to lose nothing of the original data in the digital encoding process.

The two most widely used are:

- FLAC
- WMA

FLAC

FLAC stands for Free Lossless Audio Codec. Unlike MP3 and its ilk, FLAC does not sacrifice any of the music information during the encoding process, although the file sizes are smaller than the digital files used by a CD (WAV format). This is because the FLAC format was created specifically for audio and offers a very efficient way of compressing the audio file size without any loss of audio quality. Consequently there is no difference in sound quality between a FLAC file and the original CD. FLAC is particularly useful for backing up existing music collections in the event of damage to the original CDs. For audio buffs, FLAC is the ideal digital method to download and store your music collection digitally.

As FLAC possesses a higher level of sonic detail than its lossy competitors, it necessarily takes up more memory space than an equivalent MP3 of the same amount of music. This can be offset by the use of external hard drives if, for example, you have a large music collection. An external hard drive is an inexpensive purchase relative to the vast amount of data it can store. An average FLAC album file takes up about 300mb of space and a typical hard drive (for example a 1 terabyte drive (1TB=1000GB)) would be able to store up to around 3000 albums encoded with FLAC – such a drive would only cost around £50-£100, or \$100-\$150.

WMA

Used at a very high-bit rate WMA offers a lossless equivalent to that of FLAC.

Why is Passionato's lossless format FLAC instead of WMA?

Passionato uses FLAC as its lossless format of choice because it combines perfect sound reproduction with the ability to be played across a wider range of formats and players - what is known in the computer trade as 'open source' - than its WMA equivalent.

DRM

DRM stands for Digital Rights Management. This was used in the early days of digital music downloading in order to prevent illegal copying and distribution of the file by effectively placing a digital 'lock' on the file. This meant DRM restricted what the purchaser can do with that download i.e. transfer it to a different PC or limit the amount of times a file could be burned to disk. Nowadays most record labels these days have stopped using DRM, recognizing the frustrations of the majority of music buyers who use their music legally.

All music files offered for sale by Passionato DO NOT have DRM and therefore do not place any restrictions on how the purchaser can use the file, although please note that any downloads you purchase are still subject to copyright laws and should be for your personal use only and not re-sold or given to anyone else.

What is the best option for me - FLAC or MP3?

Whether you use FLAC or MP3 as your digital file of choice depends on what you want from your music. For general day-to-day use, played through a standard Hi-Fi system, through the computer or on a portable digital player the MP3 format is a great all-round choice.

Although it does not match the sound quality of FLAC, MP3 reproduction is remarkably faithful to the original music source at the highest bitrates. The maximum bitrate for MP3 of 320k copes excellently with classical music, and, apart from the most demanding of music passages, many listeners will be unable to tell the difference.

That said, for the total music experience FLAC is ideal and no-one who purchases a FLAC file from Passionato will feel that they have been short-changed by not buying the equivalent CD. Also if space does become an issue a FLAC file can be copied and converted into a lossy format such as an MP3 for use on a portable device, for example, where storage space is more limited.

The reverse is not true of MP3 – although you could convert an MP3 file to FLAC you would not get FLAC quality. In fact re-converting an MP3 file to another format, or even another MP3 bitrate, will always degrade the sound quality further since you are copying from one lossy format to another (a bit like copying one cassette copy to another copy rather than copying from the original LP – for those of you who still remember!). Converting from FLAC to another format, such as MP3, is virtually the same as copying from the original CD into MP3.

Mind the Gap! FLAC v MP3

One final consideration for Classical users is the issue of so-called “gapless” playback. When, as with some classical recordings, a continuous piece of music spans across two tracks, on CD playback is seamless. With some MP3 files this has not always been the case, and some listeners may notice a tiny gap or click when the player transitions from one track to another when there is continuous musical content playing (as with some symphonic or opera recordings). The reason for this slight “gap” is to do with the development of the MP3 format, and the fact that in the early days of MP3 an artificial gap “tag” had to be put into the MP3 file to ensure that all MP3 players would play back the file without missing the music at the start of a track.

Nowadays most MP3 players and encoders are much more sophisticated, so you are only likely to encounter this issue on older MP3 files. Both MediaMonkey and iTunes can rip and playback gapless MP3s.

On the other hand FLAC has no such problems, and will encode and playback gaplessly by default: so a symphony with movements that span two tracks will always playback seamlessly, as it would on the original CD.