

# Apacer Audio Steno BP300: a Review

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## 1 Disclaimer

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## 2 Rationale (Why I Bought It)

The Apacer Audio Steno BP300 (hence BP300) is a 128MB USB flash drive, an MP3 player and a voice recorder. I got it so I can record my presentations and lectures and put the recordings online. The MP3 player and flash drive abilities are really extra features that I don't need.

## 3 What Comes with It

1. the player itself (of course!)
2. 1 neck strap
3. 1 wrist strap
4. 1 pair of headphones
5. 1 AAA battery
6. 1 manual
7. 1 software CD-ROM
8. 2 extra caps
9. 1 USB extension cable

## 4 The Player

The player is not exactly tiny compared to other USB flash drives. This is mainly due to the battery compartment that is unnecessary for a flash drive. The dot-matrix LCD screen and headphone jack also use up valuable space. On the other hand, the device is still very small compared to other MP3 players, especially the ones without specialized flat rechargeable batteries.

With the cap on, the whole player is about 4 inches (10cm) long, one inch (2.5cm) thick at the thickest point and about one inch (2.5cm) wide at the widest point. I really dislike the shape of the player. Why can't the

designer go with the usual rectangular shape? The odd cigar shape of the player makes it difficult to stay stable for recording purposes.

I would *much* rather the designer make it wider (put the AAA battery compartment on the side) but thinner.

This odd shape also makes it necessary to use the extension cable. It is nearly impossible to plug the unit in directly to an USB port if you have other devices already connected. If your computer/hub has nothing connected, you can probably connect the player directly. Personally, I always prefer to use a cable so I don't have to fuss behind the computer or at the hub. Given that the player needs to connect via a cable anyway, the designer could have used a miniature USB connector on the unit and save some more space.

On the plus side, this player/recorder is quite easy to operate. To play music, just press the play button once to turn on the unit, then press the button one more time to play music. Volume control is obvious and easy to get to. There is also a "lock" latch to prevent accidental button activations. The display isn't big, but it displays the name of the song, sequence number of the song, time, playing mode, equalizer settings. Not as flexible and informative as my iRiver SlimX, but it is quite enough for most people.

Getting to the set up menu is also easy. A jog/button combo allows a user to navigate the menuing system with one finger (thumb). The preset equalizer settings are okay, but with my Grado Labs headphones, the default setting is fine. You can change other settings, such as repeat, shuffle, backlight on duration, auto-off and etc. via the menuing system. You can even delete files through the menuing system. This is helpful for voice files.

## 5 The Included Headphones

Surprisingly, the sound quality of the included headphones is not bad at all! These are the over-the-ear type (instead of the inner ear type), so they have a larger driver. When I am at home, I'd use my Grado Labs headphones. But when I am on the move, I'd definitely go with the included headphones.

## 6 USB Mass Storage

As an USB mass storage device, the BP300 is *slow*. It probably has a reasonable buffer because the first 10MB or so is fast (limited only by the USB 1.1 standard, 12MB/s). However, after the first 10MB, it becomes extremely slow. I suspect the flash memory is slow to write to.

If you use Windows (98SE and later), you don't need any extra drivers. With the included drivers, I was able to make my Windows 98 system recognize and use the device. If you use Linux, the `usb-storage` module doesn't fully work with this device yet. You can read files and delete files, but you cannot create new files. Fortunately, I run Windows 98 in a VMWare box under Linux on my notebook computer. I was able to go through Windows 98 in VMWare to upload files onto the BP300.

If you use the device as a flash drive, you don't even need to put in a battery!

## 7 Sound Quality

The sound quality of this little device (using one AAA battery) is surprisingly good. As mentioned, I wasn't even planning to use it as an MP3 player, but its sound quality is *so* good that I am now changing my mind!

## 8 Voice Recording

Okay, now we get to the feature that I got the device for.

To start recording voice, you only have to turn it on using the play button, then press the record button to start. To stop, press the record button again. Each time you toggle the record button, a new voice file is created. In other words, there is no pause button.

The recording format is ADPCM (adaptive differential pulse code modulation). According to `sndfile-info` (a Linux tool to examine sound files), the format is IMA-ADPCM. There are variants of `.WAV` files, and this

variant is not the most compact one. It takes 8055 bytes per second in the voice-quality setting. This translates to 29MB per hour.

In Linux, I can use `sndfile-convert` to convert the format to a more compact encoding called GSM610 that is less than one half the size of IMA-ADPCM. GSM610 at the same sampling rate (16KHz, 8-bit) uses 3250 bytes per second, or about 12MB per hour. Note that there is no loss of quality going from IMA-ADPCM to GSM610. By the way, Windows (XP at least, probably the same with most other versions) knows how to play GSM610 encoded wave files.

Lectures and presentations can be recorded just fine at 16kHz sampling rate. For music, you can select 44.1KHz instead. Since the recorder can only record one channel, I do not intend to record any music anyway. It is nice to know, however, that I have an option to record at a higher sampling rate.

## 9 Power Consumption

I am impressed by how long a *rechargeable* AAA cell can last. The package indicates that the unit operates (plays MP3) for 12 hours with one AAA battery. This is most likely based on alkaline type batteries with 1150mAH of capacity (with a cut-off at 0.8V).

A NiMH AAA cell has about 650mAH to 700mAH. In other words, it has about one half the capacity of an alkaline cell. This calculation, however, does not take into account that a NiMH cell specification uses a cut-off at 1.0V.

The specifications of BP300 does not indicate when it considers a battery drained, but it is unlikely to use a battery all the way down to 0.8V. In other words, in terms of actual usable capacity, a NiMH AAA cell may be much more than one half of that of an alkaline AAA cell.

One problem of using a NiMH cell instead of alkaline is that the battery indicator will indicate almost empty even with a freshly recharged cell. This is because the “full” voltage of a NiMH battery is 1.25V instead of 1.5V. I find that the player continues to operate for quite a bit of time even after the battery indicator is completely empty with a NiMH battery. This means it may be difficult to really estimate the remaining capacity of a battery.

## 10 Firmware

The firmware of BP300 probably is made to work for Windows only with the supplied utility software. It is probably not fully up to spec. for USB mass storage devices since the manual explicitly said to use its own utility for reformatting the flash drive.

When I played around with it using Linux, I had probably damaged the partition. The device reported “full” even when I just uploaded 70MB of music. Reformatting it using the supplied utility software fixed the problem, but that did not inspire confidence.

I was later informed that the `mtools` package works fine with the BP300. Sure enough, `mcopy`, `mdel` worked with the device without any trouble. You need to include the necessary USB related options (either compiled into the kernel or as modules), and you need to add a line to `/etc/mtools.conf` as follows:

```
drive f: file="/dev/sda1"
```

Of course, you may need to change the drive letter `sdb1` and etc. if you have other SCSI or emulated SCSI drives.

## 11 Conclusion

Dr. Tak thinks the BP300 is a good buy at US\$75 each. Considering what it can do (flash drive, voice recorder and MP3 player) and the initial quality and finishing, it is quite a bargain. An Olympus (Japanese) voice recorder that can also play MP3 is almost US\$300, while the Korean Cubig voice recorder with FM radio and MP3 player is about US\$140. Note that both the Olympus and Cubig *requires* the use of their own software to load files to

the devices. This means you cannot practically use the devices as general purpose removable drives. The BP300 is about US\$75 from <http://www.ajump.com>, and it doesn't require any special drivers for Win98SE and later!

The design of the device can also be improved to make it smaller, slimmer and more function (all at the same time!). This is, however, really a minor complaint.