

Rarely Asked Questions

Strange stories from the call logs of Analog Devices

VFB or CFB that is the question!

Q. Why is it, that voltage feedback amplifiers seem to dominant the op amp landscape compared to current feedback amplifiers?

A. Some may argue when it comes to selecting an op amp, it's more of a personal preference or taste in amplifiers. As in life we tend to choose things (op amps included) based on personal experience. That is probably why quite often engineers select voltage feedback (VFB) op amps over current feedback (CFB) op amps.

So why is that? Well I'm sure that there are lots of reasons, just the sheer numbers, there are a lot more VFB amplifiers than CFB to chose from, but another reason is education. In colleges most often voltage feedback is the standard that is taught in the classroom. Many of the op amp examples found in text books, labs or simulations focus on VFB. You'll find very few examples of CFB op amps described in college text books, and if you do, they will only be briefly mentioned.

Now we can't possibly cover all the differences and options between current feedback and voltage feedback amplifiers here, but we can discuss a few key points. First the design equations used for voltage feedback amps work equally well for current feedback amps, so nothing new to learn there. Voltage feedback amplifiers have a fixed gain bandwidth product; current feedback amplifiers do not, so you can have high gain and high bandwidth with a CFB amp. Voltage feedback amps have two high input impedance nodes, current feedback amps only have one, the non-inverting input; the inverting input is a low impedance input. Voltage



feedback amplifiers have "open loop gain"; current feedback amps have "open loop transimpedance." Current feedback amplifiers have very wide bandwidths and very high slew rates compared to VFB amps. The feedback resistor plays a large role in CFB amplifier stability, unlike voltage feedback amplifiers. This limits the choices of feedback resistor (the value can be found in the manufacturer's data-sheet) it can also limit the value of the gain set resistor.

We've only scratched the surface here, regarding current and voltage feedback amplifiers. Current feedback amplifiers provide engineers with another powerful option when designing circuits. We have a great deal of additional information on current feedback and voltage feedback amplifiers which can be accessed by clicking on the link below. So next time you're in the mood for a voltage feedback amp, take a moment and look the menu over, you may find a tasty alternative awaits you.

**To Learn More About
Voltage Feedback and Current
Feedback Amplifiers**

<http://designnews.hotims.com/27735-100>



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