

# Re: some questions about high precision constant current source

---

*Source:* <http://sci.tech-archive.net/Archive/sci.electronics.design/2005-08/msg04046.html>

---

- *From:* "Walter Harley" <[walterh@xxxxxxxxxxxxxxxxxxxxxxxx](mailto:walterh@xxxxxxxxxxxxxxxxxxxxxxxx)>
  - *Date:* Mon, 29 Aug 2005 12:04:09 -0700
- 

"eehinjor" <[eehinjor@xxxxxxx](mailto:eehinjor@xxxxxxx)> wrote in message  
[news:1125320855.248526.37170@xx](mailto:news:1125320855.248526.37170@xx)  
> hi,everybody. I have some questions about high precision constant  
> current source.My goal is 1uA whose error is blow 0.01%. In my circuit  
> I used a op-amp,p-mosfet and 5V voltage reference. But the result is so  
> bad,the error is almost 1%. Could somebody give me some hints? Thanks  
> very much. eehinjor

What are you using for your 5V voltage reference? (Are you sure that it is stable? .01% of 5V is 0.5mV; for comparison, an LM7805 is specced at thermal drift of 0.8mV per degree C.)

Are you seeing thermal effects in your sense resistor? (Easy for air currents to change the temperature of the resistor by .01%)

How well do you trust your meter? (Take a look at its specs – even on a good meter, you shouldn't trust the least significant digit very much.)

There's good information on designing precision devices in Art of Electronics. Getting .01% accuracy is not a matter of getting one thing right, it's a matter of getting very few things wrong.

---

• *References:*

- ◆ [\*some questions about high precision constant current source\*](#)  
◇ *From:* eehinjor

- Prev by Date: [\*Re: University of Arizona: Arctic will likely see ice-free summers\*](#)
- Next by Date: [\*Re: University of Arizona: Arctic will likely see ice-free summers\*](#)
- Previous by thread: [\*Re: some questions about high precision constant current source\*](#)
- Next by thread: [\*New audiophoolery\*](#)
- Index(es):
  - ◆ [\*Date\*](#)

Re: some questions about high precision constant current source

◆ *Thread*