

Ultra low-noise current sources

C. Ciofi, R. Giannetti, V. Dattilo, B. Neri

Abstract— The solid state DC current sources available on the market are not suitable for applications in low noise measurement systems because of the high level of low-frequency noise introduced in the measurement chain. The most important cause of low-frequency noise in such instruments is the solid state device used as a voltage reference (usually a Zener diode). This problem has been solved, in the instrument described in this paper, by using a new circuit topology in which the solid-state voltage reference has been substituted by a low-noise battery. The instrument, capable of supplying a current as high as 100 mA, is characterized by a low-frequency noise level some orders of magnitude lower than that of similar commercial instrumentation.

Index Terms— Batteries, circuit noise, circuit synthesis, current supplies, dc generators, noise.

Due to copyright restriction we cannot distribute this content on the web. However, clicking on the next link, authors will be able to distribute to you the full version of the paper:

[Request full paper to the authors](#)

If your institution has an electronic subscription to IEEE Transactions on Instrumentation and Measurement, you can download the paper from the journal website:

[Access to the Journal website](#)

Citation:

Ciofi, C.; Giannetti, R.; Dattilo, V.; Neri, B. "Ultra low-noise current sources", IEEE Transactions on Instrumentation and Measurement, vol.47, no.1, pp.78-81. February, 1998.