

Original Paper

Integrated Calibration System for Accurate AC Current Measurements up to 100 kHz

Mamdouh Halawa¹ , Amal Hasan¹, E. H. Shehab-Eldin² and E. M. El-Refae²

(1) National Institute for Standards (NIS), Tera St., El-Ahram, Box: 136, Giza, 12211, Egypt

(2) Faculty of Engineering, Helwan University, Helwan, Egypt

 Mamdouh Halawa

Email: mamdouh_halawa@yahoo.com

Received: 18 March 2012 **Accepted:** 23 May 2012 **Published online:** 20 July 2012

Abstract

This paper describes the establishment of an integrated calibration system for accurate AC current measurements at National Institute of Standards, Egypt. The measurement system consists of a new assembled thermal current converter (TCC) associated with an appropriate hardware and automation software. The system has been used for a wide range of AC current from 5 mA to 20 A at frequencies from 10 Hz to 100 kHz. The assembled TCC at rated current of 5A was modified and recalibrated in PTB, Germany to enhance the system reliability. The estimated uncertainty budget of this system is presented in this paper.

Keywords

Automated calibration system – AC current measurement – Thermal current converter – Uncertainty analysis