

# Experimental Verification of the Active Front-End Converters Dynamic Model and Control Designs

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## Abstract

This paper presents a dynamic model of the active front-end (AFE) converter in the synchronous reference frame under balance input voltage condition. Transfer functions of the closed-loop control based on this dynamic model are verified experimentally in the frequency domain. Bode plots of these transfer functions are given to validate this synchronous frame-based dynamic model. Based on these results, this paper presents the control designs of the AFE converter to enhance the disturbance rejection capability and robustness. The control designs are then verified experimentally in the frequency domain. The frequency response of the AFE converter system is measured by an Agilent 35670A dynamic signal analyzer to validate the performance of the AFE converter system

Keyword : Active Front-End Converters