

Sensorless Control of DC-DC Converter Using Integral State Feedback Controller and Luenberger Observer

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Abstract: This paper presents a design of linear state feedback control of DC-DC Boost converters, in order to achieve a particular desired behavior. To guarantee a zero steady state error, we introduce an integral action, which will work out this problem by assuring that the steady state error will end up to zero. If it is supposed that both the voltage and current are measured, so much more sensors are needed then and consequently causing a high cost, so that to estimate the voltage and current with a low cost and less complexity it is preferred to introduce a state observer. An observer or estimator is a dynamic system that uses the available information on a real system, according to the inputs and outputs of the real process and estimate the system state. Simulations results demonstrate the robustness and effectiveness of the proposed control scheme.

Keywords : Boost converter, observer, Static error, Feedback control