

**Dynamic Characteristic and Contact Bounce Analysis for A New AC
contactor with PWM controlled coil**

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ABSTRACT: In the optimum design of AC contactors, it is important to analyze the dynamic characteristics. Moreover, movable contact and core bounces have remarkable effect on the lifetime of contactors. Firstly, according to a new kind of AC contactor with PWM controlled coil, this paper builds two different sets of periodically inter-transferred equations. The equations describe the coupling of the electric circuit, electromagnetic field and mechanical system taking account of the influence of friction. And after solving these equations, the dynamic behavior with consideration of contact bounce of the contactor can be gotten. Finally, the paper proves that the bounce time and power consumption of the AC contactor with PWM controlled coil working is much less than that of the general AC contactor by both simulation and experiment, and also proves that the pick-up voltage and release voltage of the AC contactor with PWM controlled coil are the same with the AC contactor by experiment.

KEY WORDS: PWM controlled coil, dynamic characteristics, contact bounce, contact resistance, power consumption