

# SPWM and Vector control for an AC servo motor drive

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## ABSTRACT

The purpose of this paper is to build a three-phase AC servo motor drive with Microchip's digital signal processor (DSP) dsPIC30F4011 as the core of the control. In order to improve mathematical ability of the servo system and greatly reducing hardware space, a set of digital servo drive system has been developed. The main drive uses the dsPIC30F4011 as the core elements and mathematical operations in the hardware circuit. In this study, an IPM module Toshiba's TPD4125K is applied as the PWM switch. In the drive mode, the quadrature encoder interface (QE1) A, B phase of motor position are captured, Motor speed is obtained through a mathematical relationship between the encoder conversion. Phase current signals obtained the d-q axis current are measured. And then, coordinate conversion to output from the dsPIC through the gate-driver complete sinusoidal pulse modulation SPWM electronic commutation. Experimental results demonstrated to achieve the objective of servo motor current vector control and speed control.

Keywords : AC servo motors、Sine Pulse Width Modulation(SPWM)、d-q axis

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