Sensorless control of brushless permanent-magnet motors

曾智堂、陳盛基

E-mail: 317706@mail.dyu.edu.tw

ABSTRACT

In this paper, a brushless DC (BLDC) motor is studied. We propose the detecting phase back-EMF sensorless controller architecture. This architecture combines analog hybrid digital-control and a control technology without sensor on brushless DC motor. Design of BLDC motor control of sensorless IC, brushless DC motor control is implemented by using Microchip Company PIC16F877 single-chip. In this study, we integrate key technologies including sensorless control technology, motor control chip design and motor drive power modules. The stationary position of rotor is first detected, and then the motor is accelerated until the back electromotive force is large enough. After this accelerating, the position of motor is estimated correctly in sensorless mode. In this method, no position sensors are required. Therefore the cost is reduced. Experimental results verify the feasibility of the proposed methods.

Keywords : brushless dc motor、back EMF(BEMF)、sensorless control、motor control IC、motor drive power modules

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