

Servo motor drives generally consist of current, velocity, and position control loops. Tuning these controllers to achieve satisfactory and consistent dynamic responses is crucial. In this paper, a parameter identification and autotuning scheme for permanent-magnet ac servo motor drives is presented. Motor electrical parameters such as resistance and inductances were identified first for current control loop tuning. The torque constant and mechanical parameters were then identified for velocity and position loop tuning. The experimental results verified that the proposed scheme can estimate parameters accurately and within a short time. In addition, the system tuned by the proposed scheme was consistent with the desired dynamic performance.