

Motor Drive Module

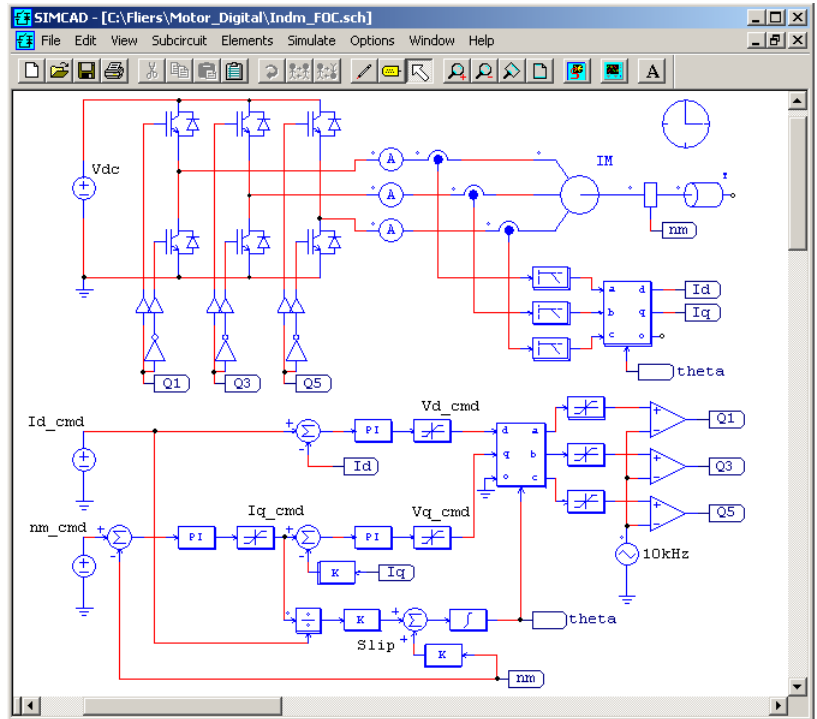
FOR ADJUSTABLE SPEED DRIVES AND MOTION CONTROL

The Motor Drive Module is an add-on module to the PSIM software. It provides an easy and effective way of modeling and simulating motor drive systems.

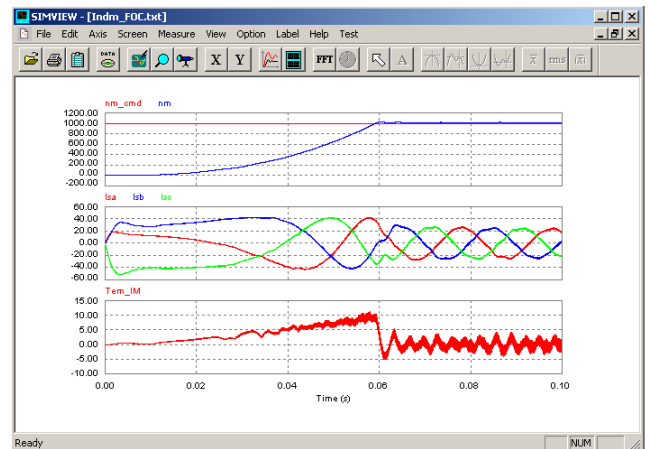
Analysis and design of a motor drive system is often a challenging task, due to the complexity in machine modeling and in control loop design. Such a task becomes considerably easier with the Motor Drive Module. Commonly used machine models and mechanical load models are provided. Using the Motor Drive Module together with PSIM's control library, one can set up a motor drive system quickly and conveniently. Also, provision is given so that one can connect custom-built machine/load models to the models in PSIM.

In addition, with PSIM's SimCoupler Module, one can simulate the power stage of a system (including electrical machines) in PSIM, and simulate the control stage in Matlab/Simulink*. One can also connect a model, that one already built in Simulink, to the rest of the power/control circuitry in PSIM.

The example on the right illustrates PSIM's capability to simulate complex motor drive systems. The system shows the field-oriented control of a squirrel-cage induction machine. With built-in blocks such as abc-dqo transformation blocks, PI controllers, and low-pass filters, the setup of the system in the PSIM environment is very simple and the schematic layout is easy-to-follow. With a time step of 1 microsecond, it takes just 2 minutes to simulate this system for 0.15 seconds.



Field-oriented control of the squirrel-cage induction machine



Simulation waveforms of the speed, stator currents, and developed torque

Motor Drive Module Includes:

- DC machines
- 3-phase squirrel-cage and wound-rotor induction machines
- Permanent-magnet and externally-excited synchronous machines
- Brushless DC machines
- Switched reluctance machines
- Constant-torque, constant-power, and general-type mechanical load
- Speed and torque sensors
- Gear Boxes

* Matlab and Simulink are registered trademarks of the MathWorks, Inc.