

Alizem Motor Control IP Cores Brochure for Altera FPGAs

GENERAL OVERVIEW

Alizem Motor Control IP Cores enable FPGA-based motor control system designers to quickly implement high-performance, reliable and energy-efficient BLDC, PMSM and IM motor controls optimized for their specific application while reducing development costs and time-to-market.

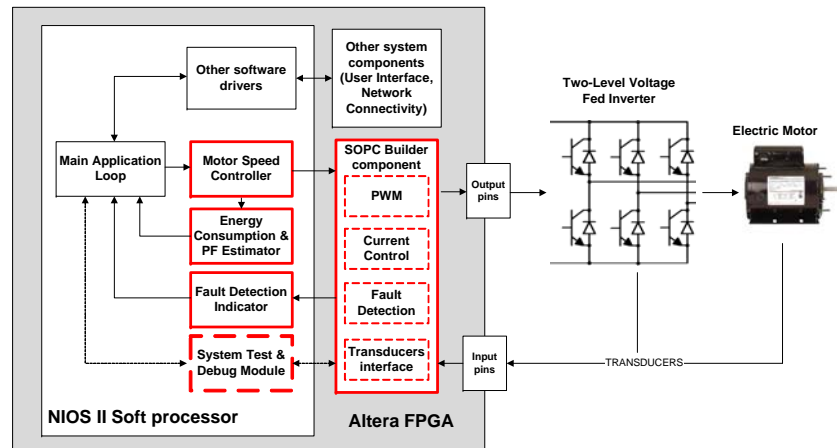
Optimal cost/performance/reliability is achieved for every application with a specific configuration of PWM, current control and fault detection features which can be parameterized by the user through an intuitive and easy-to-use interface.

Alizem Motor Control IP Cores are designed with proprietary digital signal processing algorithms (DSP) that maximises performance and FPGA resources utilization.

SYSTEM DESCRIPTION

Alizem Motor Control IP Cores are composed of a hardware (SOPC-Builder block) and a software components (NIOS II application programming interface) connected via Avalon bus. The hardware block integrates PWM, current control, power converter fault detection and transducers interface functionalities. The software components include motor speed control, energy consumption estimation, motor and power fault detection and system debug functionalities. Actual software / hardware partitioning is optimally adapted to specific application requirements.

FUNCTIONAL SCHEMATIC



PWM (Pulse-width Modulation)	
Standard PWM	Also known as space vector PWM, this PWM maximizes DC bus utilization and performance for a large number of applications.
Optimized PWM	Enhanced space vector PWM that takes into account systems parameters to minimize power converter switching losses and motor time-harmonic losses.
Current Control	
Low-dynamic	Also known as scalar control or V/f control, this current control technique is ideal for low dynamics application such as pump and fan control.
High-dynamic	Also known as vector control or field-oriented control, this current control technique is ideal for high dynamics application such as robotics and servos.
Sensorless	High performance algorithms allowing the motor to operate without position and/or speed sensors hence increasing reliability and reducing costs.
Minimum Loss	High performance algorithms optimizing motor flux and providing additional system power savings.

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Other	
Fault Detection & Diagnosis Module	High performance algorithms allowing the preventive detection of bearing and winding faults in the motor, switching fault in the power converter and unusual load behaviour faults (ex: pump cavitation) in order to increase system reliability and safety while reducing maintenance costs.
Energy Consumption & Power Factor Estimator	Ideal for smart grid applications, this module estimates instant power consumption, total energy consumption over a period of time and power factor and make this information available for plant management systems.
Test & Debug Module	Enable system designers to easily test and debug their system (power converter and transducers) before connecting motor and applying power.

BENEFITS

- ✓ Quick and easy to integrate
- ✓ Requires no extensive FPGA nor Motor Control experience
- ✓ Software form factor enables shipping in unlimited quantities and perfect quality
- ✓ Voltage and current control optimized for maximum power savings and maximum power converter utilization
- ✓ Smart-Grid Enabled with integrated energy consumption and power factor estimation
- ✓ Continuous product improvement

APPLICATIONS

- ✓ Home appliances (washing machine, refrigerator, etc.)
- ✓ Industrial pump, fan and servo drives
- ✓ Automotive hydraulic & coolant pumps, electric braking

INTEGRATION SUPPORT SERVICES

Every Alizem Motor Control IP is bundled with integration support services designed to fit your needs and reach your objectives. Our motor drives and FPGA-based embedded system professionals are ready to help you for the IP integration process and to advise you regarding optimal system architectures for your specific application.

ENGINEERING AND MARKETING SERVICES

- ✓ Motor Control Drive system design
- ✓ FPGA-based embedded system design
- ✓ System simulation, software development and integration
- ✓ Market-oriented white paper redaction
- ✓ Continuous IP / Technological watch

CUSTOM REQUIREMENTS

Does your application have special requirements to be met and that you would like to be included in Alizem Motor Control IP Cores ? We will be happy to work with you to reach both your technical and business objectives.

OUR COMMITMENT

To help you win in your market by easily and quickly integrating high-performance motor control components in your system.

PRICES & MORE INFORMATION

Please contact us: sales@alizem.com

Website : www.alizem.com