



HIGH-PERFORMANCE, FLEXIBLE
INTERFACING AND INTEGRATION FOR
COMPLEX MOTOR CONTROL FUNCTIONS

AVNET SPARTAN-6 FPGA MOTOR CONTROL DEVELOPMENT KIT

➤ Motor Control Applications

- Electric Drives
- Servo Systems
- Energy and Power Systems
- Assembly Machinery
- High-performance Stepper
- Multi-axis Motor Control

➤ Benefits of Designing with Xilinx Platforms

- Over 15X faster loop time compared to MCU
- High-performance (precision, efficiency, lower Total Harmonic Distortion)
- Modular and hardware proven FOC IP blocks
- Advanced modulation schemes (SVPWM and RPFM)
- Integration of networking and other custom functions
- Control of Multiple motors with a single device

The power of programmability gives industrial automation designers a highly efficient, cost-effective alternative to traditional motor control units (MCUs). The parallel-processing power, fast computational speeds, and connectivity versatility of Xilinx® FPGAs can accelerate the implementation of advanced motor control algorithms such as Field Oriented Control (FOC). Additionally, Xilinx devices lower costs with greater on-chip integration of system components and shorten latencies with high-performance digital signal processing (DSP) that can tackle compute-intensive functions such as PID Controller, Clark/Park transforms, and Space Vector PWM.

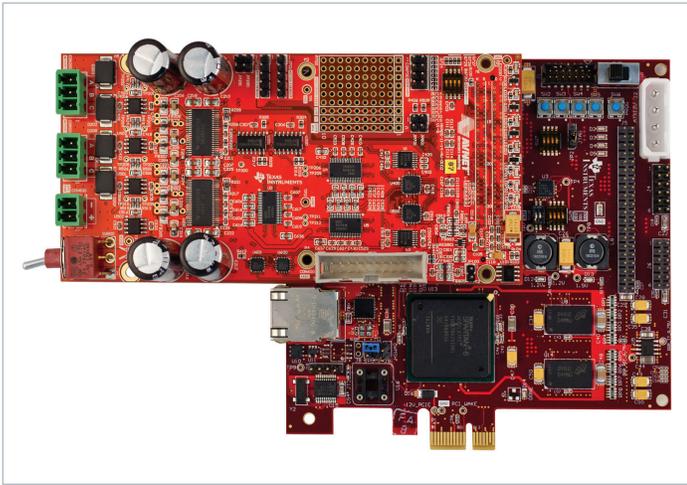
The Xilinx Spartan®-6 FPGA Motor Control Development Kit gives designers an ideal starting point for evaluating time-saving, proven, motor-control reference designs. The kit also shortens the process of developing custom control capabilities, with integrated peripheral functions (Ethernet, PowerLink, and PCI® Express), a motor-control FPGA mezzanine card (FMC) with built-in Texas Instruments motor drivers and high-precision Delta-Sigma modulators, and prototyping support for evaluating alternative front-end circuitry.

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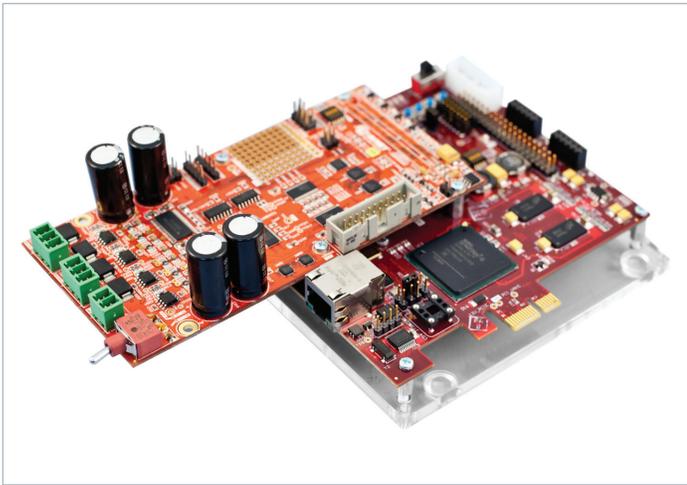
- Spartan-6 LX75T baseboard
- Motor Control FMC module
- Two Portescap motors (1 brushless DC, and 1 stepper)
- 12V power supply and adapter cable
- USB A-mini-B cable
- Ethernet cable
- JTAG HS1 Programming Cable
- License voucher for ISE® Design Suite: System Edition (device-locked to Xilinx Spartan-6 LX75T FPGA)
- Introductory reference designs
- Free evaluation of Advanced FOC (Field Oriented Control) reference design
- Getting Started Guide and User's Guide
- Schematics, BOM, and PCB files

SPARTAN-6 LX75T BASEBOARD


Spartan-6 FPGA
(Part number: XC6SLX75T-3FGG676C)

- Dual 128 MB DDR3 SDRAM banks
- 2 MB Parallel Flash
- 128 Mb Multi-I/O SPI Flash
- PCIe x1 edge connector
- 10/100 Ethernet PHY
- Low Pin Count (LPC) FMC expansion header
- Two 2x6 PMOD expansion ports
- GPIO header with LVDS support
- 16-bit ADC / 10-bit DAC

MOTOR CONTROL MODULE


Motor Control Module

The Motor Control FMC has an LPC form factor and plugs into any Xilinx FMC-enabled platform. A Portescap brushless DC (BLDC) and a stepper motor are included. The motor control module also gives designers:

- The ability to drive stepper, brushed DC (BDC), brushless DC (BLDC), and permanent magnet synchronous motors (PMSMs)
- Simultaneous support for spinning two motors (12-24V) under FPGA control
- Texas Instruments integrated motor drivers
- Texas Instruments Delta-Sigma ADCs for high-precision sensing
- Xilinx XADC header, for low-cost 7 series FPGA integration
- Hall Sensor/Encoder and GPIOM ports
- User prototyping area
- Choice of powering the module from FPGA baseboard or external source

Take the NEXT STEP

Visit em.avnet.com/spartan6motor for more information. Contact your local Xilinx or Avnet representative for a demonstration.

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Printed in the U.S.A. PN 2506