



Flexible Design and Integration

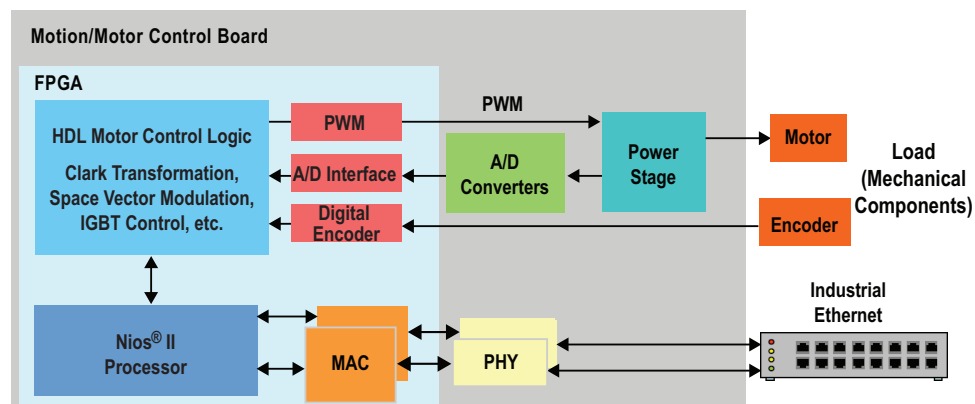
Build Flexibility into Your Industrial Applications with FPGAs

As designs for industrial systems become more complex, it's no wonder Altera® FPGAs are playing a more central role. Increasingly, our FPGAs are used as co-processors, offloading microcontroller units (MCUs) or digital signal processing (DSP) devices. And, they're also addressing cost pressures by integrating multiple functions into system-on-a-chip (SoC) implementations.

With a platform like the low-cost, low-power Cyclone® series of FPGAs, you can easily add new features to your industrial products. FPGAs let you build flexibility into your industrial applications in many ways. For example, you can:

- Integrate your own and third-party intellectual property (IP) and software stacks into your designs.
- Easily adapt to evolving industrial standards or changing design requirements.
- Scale performance with embedded processors and hardware accelerators like DSP blocks, finite impulse response (FIR) filters, and floating-point functions.
- Protect against device obsolescence, with a simple migration path to future FPGA families.
- Design with a familiar GUI-based software development environment, rather than lower-level hardware language.

Figure 1: FPGA as SOC System



Get More Performance with Fewer Boards

FPGAs deliver flexibility to:

- Implement industrial networking applications, which require a multi-processor with real-time switching capability, on a single device.
- Provide on-the-fly programmability to remote units at any time, even in the field.
- Improve performance for sequential processing of object-oriented programming methods through hardware acceleration.
- Save board space and cost by integrating features such as digital motor encoders, pulse-width modulation control, analog/digital (A/D) interfaces, DSP functions, and custom media access controls (MACs).
- Support functions previously handled by an external MCU or DSP device on embedded processors on the FPGA, since C code is portable.

Use FPGAs as co-processors or SoCs in:

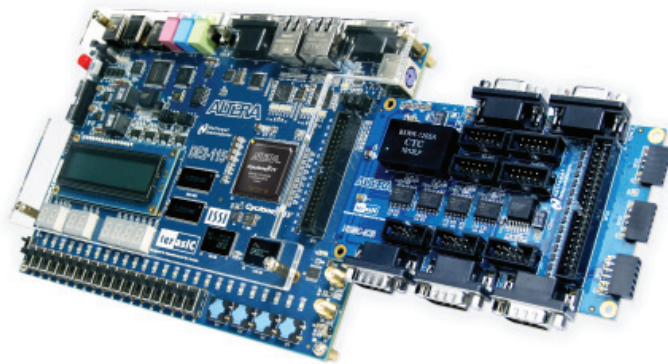
- Programmable logic controllers (PLCs)
- Human-machine interfaces (HMIs)
- Servo drives
- I/O modules
- Computer numerical control (CNC) machines, printing machines, and robots
- Factory automation and process systems
- Power distribution systems
- Machine vision
- Video surveillance
- Transportation systems (ships, trains, off-highway vehicles)

Support Multiple Products on One FPGA Platform

FPGAs have evolved far beyond glue logic and simple I/O expansion. As a single, highly integrated platform for multiple industrial products, FPGAs can cut your development time and risk substantially.

Start your industrial design with a development kit like the Cyclone® IV FPGA-based Industrial Networking Kit (INK) from our partner, Terasic. This kit is optimized for your networking needs, but also flexible enough to address your FPGA requirements.

Figure 2: Industrial Networking Kit



Want to Dig Deeper?

To learn more about how Altera FPGAs can bring flexibility to your industrial applications, contact your local Altera sales representative or FAE. For white papers, videos, webcasts, and other information, visit www.altera.com/industrial.

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