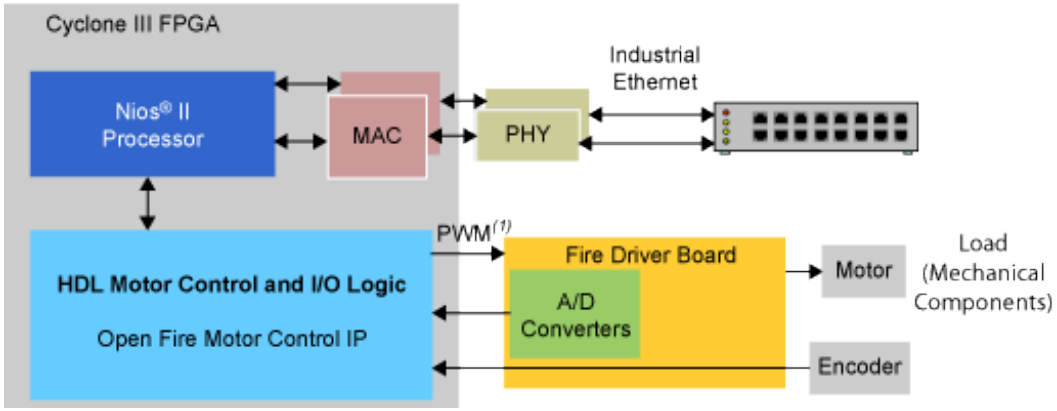
MotionFire Development Kit

Originally launched in Europe during the summer of 2008 and now available in North America through Arrow Electronics, Inc., the MotionFire Development Kit (see Figure 1) is a versatile reference design targeted at motor control applications.

Figure 1. MotionFire Development Kit (FireFighter Base)

The MotionFire platform takes advantage of the design flexibility that is inherent with FPGA designs by integrating motor control and industrial Ethernet solutions on one Cyclone® III FPGA platform, as shown in Figure 2.

Figure 2. Motor Control, I/O Logic, and Industrial Ethernet Solution on Cyclone III FPGA Platform



Note:

1. PWM = pulse width modulation

The MotionFire motor control platform offers several key advantages:

- A complete offering—simply plug in and go
- Extremely versatile high-performance motor control
- Control for up to 12 motors from one Altera FPGA
  - Motors are controlled in parallel, which simplifies verification
  - Tight coordination between all motors
  - High performance from FPGA hardware implementation

- Support for many motor types or mixes: B/BLDC (included with the MotionFire Development Kit), asynchronous, stepper, switched reluctance motors, etc.
- Free motor control reference design intellectual property (IP) from Altera® partner Unjo AB
- Modular board design (see Figure 3)
- Reference design elements include schematics, VHDL code, C source, etc.
- Industrial Ethernet solutions from Altera partner Softing AG

Figure 3. FireFighter Board

The MotionFire Development Kit consists of a FireFighter base kit (base Cyclone III FPGA board plus a motor drive board, motor, reference design IP, and documentation) and an optional FireDriver Bundle (additional motor drive board supporting two motors).

Table 1 shows the features of the MotionFire motion control platform.

Table 1. MotionFire Motion Control Platform Features	
FireFighter Base Board Features	**FireDriver Module Features**
Altera low-power Cyclone III EP3C40 FPGA	Galvanic isolation with 4-phase drivers providing up to 10 A and 50 VDC per channel
Altera Nios® II Embedded Soft-Core Processor	National Semiconductor power management and analog signal path technologies
Advanced Motor Control Algorithms	Encoder interfaces
Communications Options Including: EtherCAT Profinet Ethernet/IP SERCOS III CAN USB RS485 Next-Generation Protocols	Hall effect sensing
National Semiconductor PowerWise Products	Three-phase back EMF measurement for sensorless implementation
Dual Ethernet Ports	Synchronous ADC sampling
DDR2 DRAM and Flash Memories	Temperature sensing
General-Purpose I/O and LEDs	PWM interlocking and data serialization managed by an Altera MAX® II CPLD
Expansion Connectors for Up to Six FireDriver Power Modules to Support Up to 12 Motors or 24 Phases	-