



# ZNEO Z16F Series MCU

High-Performance 16-bit Flash Microcontroller Family



## OVERVIEW

The ZNEO™ Z16F Series of Flash microcontrollers represents ZiLOG's evolution into 16-bit processing. The ZNEO Z16F CPU instruction set has been optimized for near single-cycle instructions yielding 20 MIPS at 20MHz. Combined with large zero wait state internal Flash, powerful math functions, 32-bit ALU supporting 8-, 16-, and 32-bit operations, embedded 32x32 multiply/64x32 divide operations, and 16-bit bus widths, the ZNEO Z16F delivers a powerful, yet cost effective microcontroller solution. The compiler-friendly instruction set supports multibyte push/pop framer pointer manipulation, so that code generation is very compact. A rich array of peripherals and analog features make this microcontroller suitable for a large number of applications from security panels to motor control.

## ZNEO KEY APPLICATIONS

- Motor Control (AC Induction and Brushless DC motors)
- Systems Monitoring
- Security Panels
- Security Keypad/Displays

## FEATURES

- New ZNEO™ Z16F Series 16-bit CPU Processor Core
- Up to 128 KB internal Flash program memory with 16-bit access and in-circuit programming
- Up to 4 KB internal RAM with 16-bit access
- External Interface allows seamless connection to external data memory and peripherals with:
  - Six chip selects with programmable wait states
  - 24-bit address bus supports up to 16MB
  - Selectable 8- or 16-bit data bus widths
  - Programmable Chip Select signal polarity
  - ISA-compatible mode
- Twelve channel, 10-bit analog-to-digital converter (ADC)
- Operational Amplifier
- Analog Comparator
- 4-channel DMA controller that supports internal or external DMA requests
- Two full-duplex 9-bit UARTs with support for LIN and IrDA
- Internal Precision Oscillator
- I<sup>2</sup>C master-slave controller
- Enhanced Serial Peripheral Interface (ESPI)
- 12-bit PWM module with three complementary pairs or six independent PWM outputs with dead-band generation and fault trip input
- Three standard 16-bit timers with capture, compare, and PWM capability
- Watch-Dog Timer with internal RC oscillator
- Up to 76 I/O pins
- Up to 24 interrupts with programmable priority
- Single pin on-chip debugger
- Voltage Brown-out Protection (VBO)
- Power-On Reset (POR)
- 2.7-3.6V operating voltage with 5V-tolerant inputs
- 0° to +70°C standard temperature, -40° to +105°C extended temperature, and -40°C to +125°C automotive operating ranges



# ZNEO Z16F Series Flash MCUs

## ZNEO Z16F Series Development Kit Contents

### Hardware

- ZNEO™ Z16F Series Development Board
- USB Smart Cable for PC to ZNEO Z16F Series Development Board
- 5VDC power supply

### Software

- ZDS II ZNEO Z16F IDE with ANSI C-Compiler
- Sample code
- Document browser

### Documentation/CD-ROM

- Quick Start Guide
- ZNEO Z16F Series technical documentation (on CD-ROM)
  - Development Kit User Manual
  - ZDS II IDE User Manual
  - ZNEO Z16F CPU User Manual
  - Product Brief & Specifications

Up to 128 KB Flash	Up to 4 KB SRAM	12-Channel 10-Bit ADC
12-Bit PWM Module	<b>20MHz ZNEO™ Z16F 16-Bit CPU</b>	Three 16-Bit Timers
Watch-Dog Timer with RC Oscillator		POR/VBO & Reset Control
Operational Amplifier	On-Chip Debugger	Crystal/RC Oscillator
4 Channel DMA Controller	Analog Comparator	Internal Precision Oscillator
ESPI, I <sup>2</sup> C, and Two UARTs w/ IrDA & LIN		
Up to 76 General-Purpose I/O Pins		
External Interface		

**ZNEO Z16F Simplified Block Diagram**

## Device Chart & Ordering Information

Device	Memory		External Interface	I/O Lines	12-Bit PWM Module (Pairs)	16-Bit Capture/Compare PWM Timers	ADC Channels	UARTs w/ LIN & IrDA	I <sup>2</sup> C Master-Slave	ESPI	64/68-Pin Packages	80-Pin Package	100-Pin Package
	Flash (KB)	RAM (KB)											
Z16F2811	128	4	Yes	76	3	3	12	2	1	1			X
	128	4	Yes	60	3	3	12	2	1	1		X	
Z16F2810	128	4	No	60	3	3	12	2	1	1		X	
	128	4	No	46	3	3	12	2	1	1	X		
Z16F6411	64	4	Yes	76	3	3	12	2	1	1			X
	64	4	Yes	60	3	3	12	2	1	1		X	
Z16F3211	32	2	Yes	76	3	3	12	2	1	1			X
	32	2	Yes	60	3	3	12	2	1	1		X	

## Development Tool Ordering Information

Z16F2800100ZCOG ZNEO™ Z16F Series Development Kit  
 ZUSBSC00100ZACG USB Smart Cable Accessory Kit

Order your ZiLOG Development Kits at <http://www.zilog.com> to get your applications to market in record time.

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