Smoke and CO Detection Solution

Z8 Encore! XP® F1680 Flash Microcontroller

SMOKE & CO ALARM

Z8F1680 Series MCU

KEY FEATURES

- Wide 1.8 V to 3.6 V low-voltage and low-power operation for extended battery life
- 8-Channel, 10-bit high resolution A/D converter for highly accurate, fast speed measurements
- On-chip low-power Op-Amp for sensor output signal amplification
- Up to 256 Bytes NVDS with minimum 100,000 program/erase cycles for CO reading records
- Up to 24 KB Flash program memory for multi-sensor designs
- Supports -40 °C to +105 °C extended temperature range for indoor and outdoor environments

Z8 ENCORE! XP® F1680 MICROCONTROLLER

The Z8 Encore! XP® F1680 Series is rich with new features including 1.8 V to 3.6 V operation, Program RAM, Non-Volatile Data Storage (NVDS), fast 10-bit ADC, three enhanced 16-bit timers with Capture/Compare/PWM, multi-channel Timers, low-power Op-Amp, two analog comparators, a temperature sensor, two UARTs with LIN and IrDA, a Master/Slave I²C, and an enhanced SPI interface. The series also features an Internal Precision Oscillator (IPO) with ± 1% accuracy at 25 °C and a single-pin On-Chip Debugger (OCD) interface for debugging and in-circuit programming.

ZiLOG MEETS YOUR DESIGN CHALLENGES

Low Power Consumption

The Z8 Encore! XP® F1680 Series supports a 1.8 V to 3.6 V wide voltage range and many power saving features. The on-chip program RAM can be used to shadow frequently executed program code such as scanning and interrupt sevice routines (ISR) for an additional 30% power savings. The unused peripheral blocks can be disabled individually by software. The low-voltage and low-power features can extend battery-life and also allow the system to be powered by two AA alkaline batteries instead of the 9 V battery normally seen in most fire alarms.

Fast Sampling of Analog Signals

The high-speed 10-bit Successive Approximation Register (SAR) ADC boasts a conversion time of less than 5µs with an internal or external voltage reference. This feature saves power by reducing sample time and allowing the part to quickly return to Stop mode.

Design Flexibility

With up to 24 KB Flash memory, 1 KB program RAM, 2 KB register RAM, 256 B NVDS, and many feature-rich analog/digital peripherals, the F1680 Series provides superior design flexibility to cope with increasing system complexity.

System Cost

The highly integrated features of the F1680 Series can eliminate the requirement of a crystal, Op-Amp, or Serial EEPROM thus providing a reduction in the BOM cost for your design.

Affordable and Efficient Tools

ZiLOG offers comprehensive yet affordable design tools which come with a free license of ANSI C-Compiler, ZDSII-Z8 Encore! XP® IDE, real-time debug port, and a USB smart cable for connecting the PC to the development kit.

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Z8 ENCORE! XP® F1680 FEATURES

- 20 MHz 8-bit eZ8 CPU core
- Wide low-voltage operation: 1.8 V to 3.6 V
- 8 KB, 16 KB, or 24 KB Flash program memory
- 1 KB program RAM
- 1 or 2 KB register RAM
- 128 B or 256 B NVDS
- 8-channel fast 10-bit ADC
- Internal Precision Oscillator
- 32 kHz Secondary Oscillator
- Temperature sensor
- Two Analog Comparators
- Low-Power Operational Amplifier (LPO)
- Three 16-bit timers with optional two basic 16-bit timers (shared as UART baud rate generator)
- One 16-bit multi-channel Timer with four capture/compare/PWM modules
- Watchdog Timer (WDT) with dedicated internal RC oscillator
- On-Chip Debugger
- Low-Voltage Detection (LVD) and Voltage Brownout (VBO) protection
- Power-on-Reset (POR)
- Master/Slave I²C interface
- Enhanced SPI interface
- Two UARTs (support LIN and IrDA protocols)
- Up to thirty-seven 5 V tolerant GPIO
- Eight programmable LED Drive
- 20-, 28-, 40-, 44-pin SOIC, SSOP, PDIP, LQFP, and QFN packages
- 0 °C to +70 °C standard and -40 °C to +105 °C extended temperature ranges

FOR MORE INFORMATION

Visit us at www.zilog.com or call us at
1(866) GO ZiLOG or 408-558-8500

BLOCK DIAGRAM

Crystal/RC Oscillator	Internal Precision Oscillator	32 kHz Secondary Oscillator
8 KB, 16 KB, or 24 KB Flash	1 KB PRAM / Up to 256 B NVDS	1 or 2 KB Register RAM
Three 16-bit Timers/ PWM		Multi-Channel Timer
Up to 39 General-Purpose I/O pins	20 MHz eZ8 CPU	On-Chip Debugger
Watchdog Timer with RC Oscillator	LVD/ VBO and POR	Low-Power Op-Amp
Temperature Sensor	Two Analog Comparators	Up to 8 channel 10-bit ADC
Two UARTs with LIN and IrDA	Master/Slave I²C	Enhanced SPI

SYSTEM BLOCK DIAGRAM
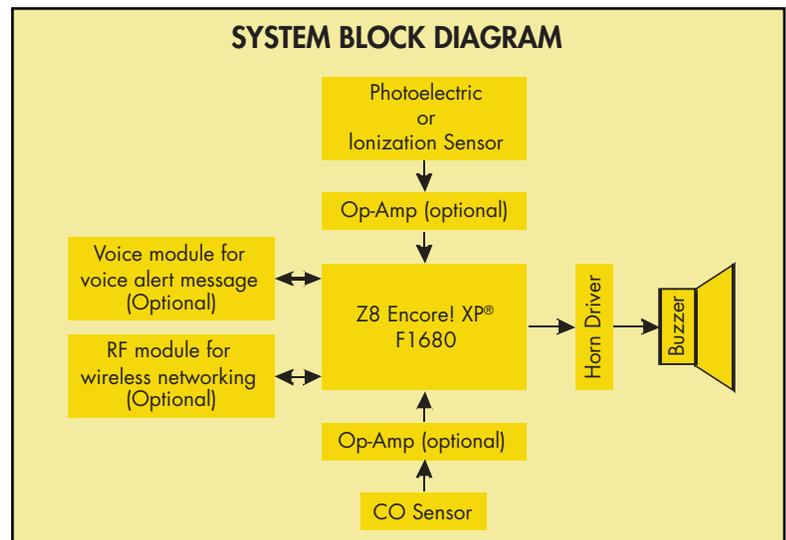
Z8 Encore! XP® F1680 Development Kit

Kit Contents:

- Z8 Encore! XP® F1680 Development Board
- USB Smart Cable
- ZDS II Integrated Development Environment (IDE) with a full ANSI C-Compiler
- Quick Start Guide and User Manual

Ordering Information

Z8F16800144ZCOG: Z8 Encore! XP® F1680 Dual F1680 Development Kit
Z8F16800128ZCOG: Z8 Encore! XP® F1680 28-pin Development Kit