MachXO Control Development Kit

Complete Development Platform for System Control Applications

Temperature and current monitoring, power supply sequencing, fan control, and fault logging are typical board control functions used in system control designs. The MachXO™ Control Development Kit provides designers with a platform for rapidly prototyping these functions.

Control SoC Design Simplifies Prototyping

Using the preloaded system-on-chip (SoC) design provided with the development kit, you can now test within minutes board control functions including fan-speed based on temperature monitoring, LCD control, comprehensive power supply monitoring and reset distribution in conjunction with the Power Manager II POWR1014A and 8-bit LatticeMico8™ microcontroller.

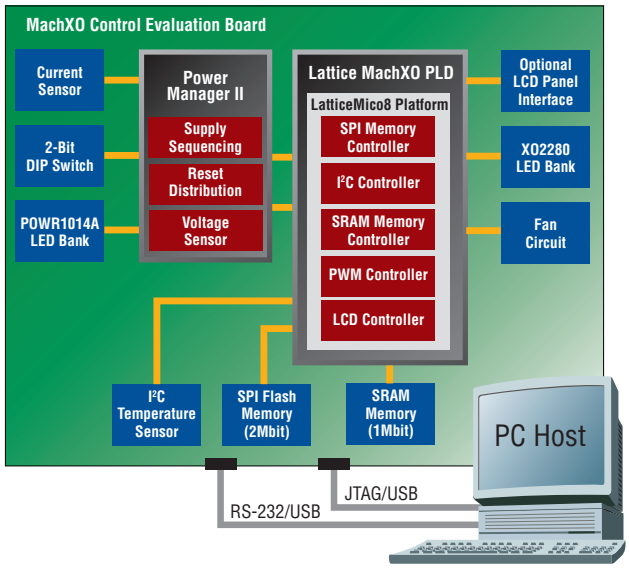
The board can be controlled with switches and a menu-driven interface via a Windows or Linux terminal program over an RS-232/USB link.

PC Board Control and Power Management

The LatticeMico8 platform provides board management functions for temperature sensing, fan and LCD control, and monitoring of the Power Manager II POWR1014A I²C interface. It integrates Lattice reference designs for SRAM and SPI Flash memory control, pulse-width modulation (PWM) fan control, LCD control, and a Power Manager II POWR1014A communication interface. All peripherals communicate across a WISHBONE-compatible bus.

Users can interact with the LatticeMico8 platform through a menu-driven terminal program running on a PC host. Switches and jumpers can be adjusted to emulate reset, sleep, and supply interruptions.

MachXO Control Eval Board Block Diagram



Key Features

- MachXO LCMXO2280C-4FT256C
- Power Manager II POWR1014A
- 2Mbit SPI Flash and 1Mbit SRAM
- I²C Temperature Sensor
- Current and Voltage Sensor Circuits
- On-board Fan
- Interface to 16x2 LCD Panel*
- SD memory and CF Memory Card Sockets*
- Audio Output Channel
- Expansion Header for SPI & I²C
- LEDs & Switches
- Standard USB cable for Device Programming and I²C Communication
- RS-232/USB & JTAG/USB Interface
- 3" x 1" Prototyping Area
- RoHS-compliant Packaging and Process
- AC Adapter (International Plugs)
- QuickSTART Guide

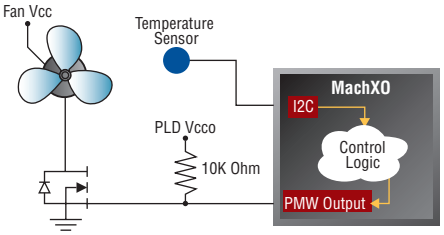
* LCD panel and SD / CF memory not included in the development kit

Ordering Information

Product	Description	Ordering Part #
MachXO Control Development Kit	MachXO Control Evaluation Board with LCMXO2280C-4FT256C device, USB cable, AC adaptor (international plugs), QuickSTART Guide and demonstration design	LCMXO2280C-C-EVN

Thermal Management Using Fan Control

Monitor the temperature of your PCB using the MachXO PLD and on-board temperature sensor. Control the speed of the fan using the MOSFET and PWM controller, and reduce the power consumption of your system.

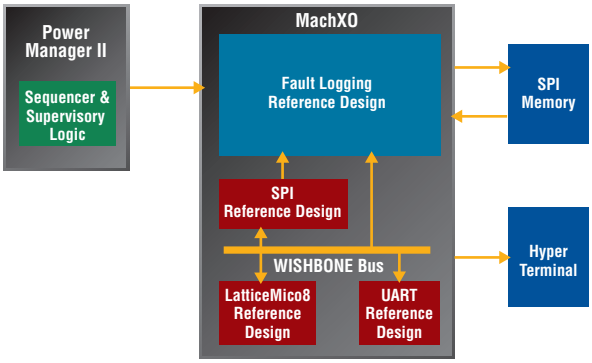


Power Supply Sequencing & Reset Distribution

Monitor multiple power supply voltage and current levels, distribute reset signals and sequence power supplies in conjunction with the Power Manager II and LatticeMico8 microcontroller.

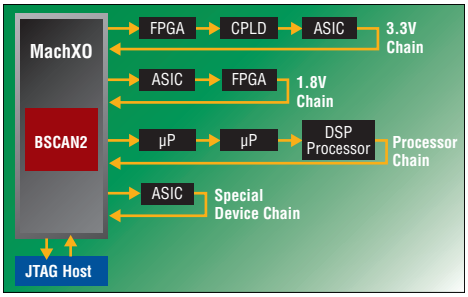
Fault Logging

Monitor and keep a log of power supply failures using the MachXO PLD, Power Manager II POWR1014A and SPI Flash memory. Maximize system reliability by monitoring devices on a PCB for marginal power supply failures.



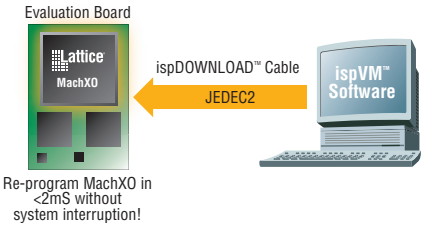
Fault Isolation Using BSCAN Linker

Using MachXO PLDs, leverage BSCAN1 and BSCAN2 reference designs to partition complex JTAG chains on a printed circuit board. Simplify board layout, detect and isolate faults more efficiently and cost effectively with zero risk.



Transparent Field Reconfiguration (TransFR)

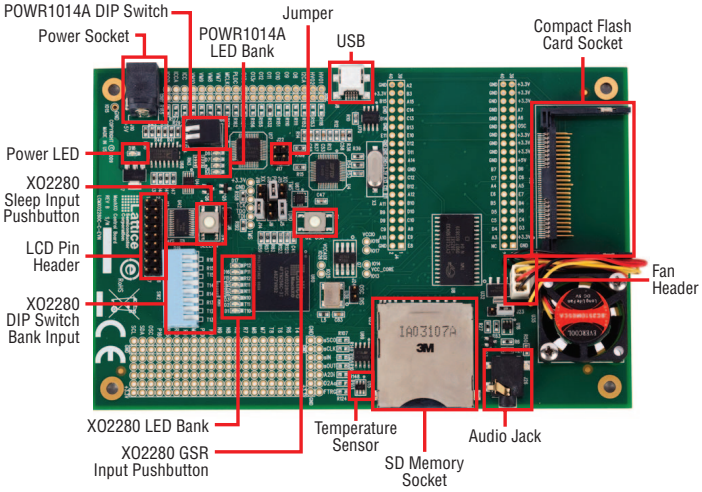
Lattice's TransFR™ technology feature enables the MachXO PLD to be re-programmed while your system continues to operate.



Interface to Compact Flash Memory

Compact Flash memory continues to be commonly found in system control designs to provide simple plug memory. This fun demo shows how you can use MachXO and LatticeMico8 to talk to Compact Flash.

MachXO Control Eval Board – Top View



Additional Information

Documentation including reference design source, sub-system descriptions, and schematics are available at www.latticesemi.com/machxo-control.

ispLEVER Starter Development Tools FREE

Lattice's free ispLEVER® development tools offer a comprehensive design environment for the MachXO architecture. Download ispLEVER Starter at: www.latticesemi.com/products/designsoftware/isplever/ispleverstarter.

Reference Design Portfolio

Lattice offers an expanding portfolio of IP cores and reference designs targeted for low-density applications. The reference designs, source codes and documentation can be downloaded for free from the Lattice website. For more information, go to www.latticesemi.com/ip.

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