Intelligent Display Control System

Features

- Configurable display controller supports different kinds of LCD, EL, Plasma display panels.
- Various display resolutions and color depth combinations can be supported.
- Touch input/resistive touch screens supported.
- Includes SDR/DDR memory controller for display buffer.
- Interfaces to CPU, Ethernet controller, SDRAM and Flash.
- Available with USB, Ethernet and WiFi interfaces. Other interfaces can be added on request.
- On-chip ADC input channels for touch sensing.
- Design secured with 128-bit AES encryption in Fusion devices.
- Low power design based on Flash FPGA architecture.
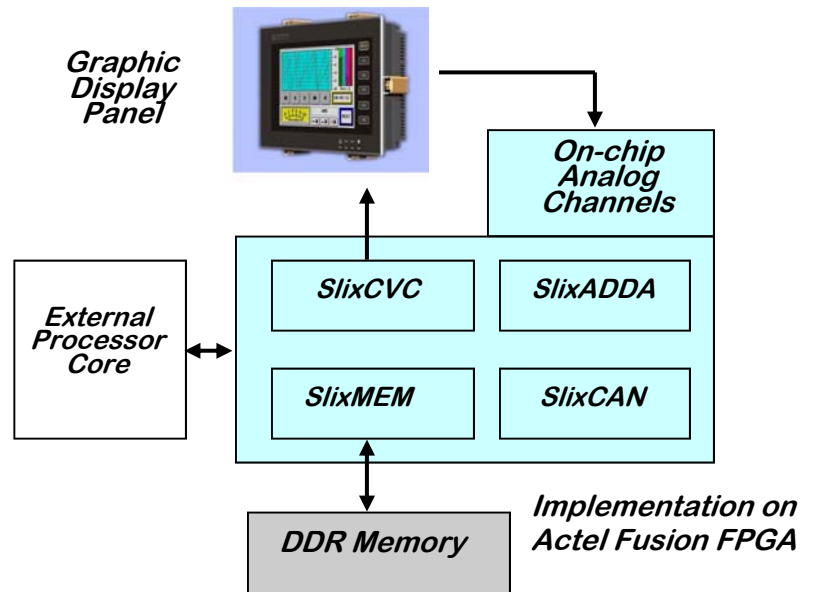
Applications

- Automated control (manufacturing and processing equipment)
- Building automation (security and surveillance)
- Consumer automation (kiosks, vending machines, ATMs)
- Advanced instrumentation (test and measurement, medical)
- Commercial transport (truck, marine, aviation)

Description

EmbeddedBlox versatile display control solution is available for implementation on Actel's Fusion, a Flash based FPGA architecture. This family of devices offer mixed signal capability with multiple Analog channels, on-chip clock generator and flash memory. These SOC features are effectively used in this application with a mix of IP cores from EmbeddedBlox. The analog circuitry required for touch input can be implemented in the Fusion FPGA as part of the SlixADDA core. The design is secured with exceptionally high security through it's 128-bit AES encryption on Fusion devices.

The display function can be enhanced by including the SlixBitBlk bitmap graphics acceleration core that works seamlessly with the SlixCVC and SlixMEM cores. The FPGA can be reconfigured with new functionality remotely over the network.

Graphic Display Panel — *External Processor Core* — *On-chip Analog Channels* — SlixCVC — SlixADDA — SlixMEM — SlixCAN — DDR Memory — *Implementation on Actel Fusion FPGA*

Peripheral IP cores can be added to suit the particular requirements of a specific market segment. EmbeddedBlox standard FPGA-based solutions are available with an SlixCAN core that provides CAN2.0B network connectivity. These cores can be interfaced with a variety of IP cores offered by Actel through Directcores and Companioncores.

EmbeddedBlox System Blocks

SlixCVC	Compact Display Controller (supports STN, DSTN, TFT LCD, and other panel displays such as EL and Plasma)
SlixBITBLK	Bit Block - 2D Graphic Accelerator (optional)
SlixMEM	DDR SDRAM Memory Controller
SlixCAN	CAN 2.0B Network Controller (optional)
SlixADDA	Matrix Keyboard / Touch Controller

The Slix™ Tool –ACT Advantage

Current FPGA design tools and methodologies require skilled FPGA design engineers to use them, which makes the whole process time consuming and costly to maintain.

What is needed is a design tool to automatically create FPGA designs based on simple architectural block diagrams. EmbeddedBlox recognized this need and created Slix™Tool. By using Slix™Tool-ACT engineers can easily construct, customize and maintain FPGA based designs without needing to have in-depth knowledge of HDL languages or FPGA design experience. Slix™Tool-ACT allows the users to easily migrate their designs to multiple FPGA devices.

Solution Comparisons

There are several popular display/LCD control ASSP solutions available on the market today from Epson. The S1D13504 chip is comparable to EmbeddedBlox's display control solution, with respect to the display features and technologies.

SmartASIC's SD1000 is another similar example of an ASSP solution for display/LCD control. One of the major issues in selecting an ASSP-based solution is the availability over an extended period of time — for the life of the equipment. This can be particularly critical for industrial equipment or instrumentation, where life cycles can be a decade or more. Popular ASSP devices may actually go obsolete rather quickly because there is pressure on the manufacturer to provide more features and reduce cost to take advantage of technological advancements.

Fusion FPGA-based reconfigurable solution protects the user from standard chip obsolescence. A particular benefit of using a Flash FPGA technology for display control solution is that multiple options can be offered in different products, all based on the same silicon. Such an approach reduces inventory and gains better pricing due to increased volume of one FPGA device.

Advantages

- LCD interface can differ between different panels based on the technology and the type or the vendor.

- By selecting the LCD based display controller that is either chip based or included as part of the microcontroller functions, the user is restricted to select from the list of panels that are supported by that chip.

- EmbeddedBlox's display control solution is tested and supported on many leading LCD panel technologies and vendors. However, the key difference is that this solution can be easily reconfigured to support any LCD panel, offering user the flexibility to integrate the panel that they would want to; depending on their relationship with the display manufacturer, the display features and the price point.

- Fusion offers secure programmable chip solution, which consumes considerable low power compared to other programmable solutions.

- Live at power-up and consolidates several SOC blocks enabling mixed signal programmable design integration.

About Actel

Actel Corporation is a supplier of innovative programmable logic solutions, including field-programmable gate arrays (FPGAs) based on antifuse and flash technologies, high-performance intellectual property (IP) cores, software development tools and design services targeted for the high-speed communications, application-specific integrated circuit (ASIC) replacement and radiation-tolerant markets.

The company is traded on the NASDAQ National Market under the symbol ACTL and is headquartered at 2061 Stierlin Court, Mountain View, CA, 94043-4655. Telephone: 888-992-2835.

About EmbeddedBlox

EmbeddedBlox aspires to be the defacto supplier of FPGA based IP, firmware and chip solutions for display, video and vision processing, specifically targeted to embedded systems.

SlixTool is our flagship product that provides an easy-to-use graphical interface for design engineers to cofigure the IP cores and IP-Blox and rapidly create/customize FPGA designs (IPMix).

EmbeddedBlox solutions can be used by OEMs and system integrators in Industrial, Automotive, Transportation and Building automation segments.