

INDUSTRY'S MOST FLEXIBLE EMBEDDED PROCESSOR  
SPECIFICALLY DESIGNED FOR COST-SENSITIVE MARKETS

## XILINX MICROBLAZE PROCESSOR: Scalable Performance and Industry-Leading Flexibility

The MicroBlaze™ CPU is a family of drop-in 32-bit RISC soft processor optimized for Xilinx FPGAs. System designers with no prior FPGA experience can leverage the no-cost, Eclipse-based [Xilinx Software Development Kit](#) along with select partner development boards featuring Xilinx cost-optimized FPGAs to immediately start developing for the MicroBlaze processor using select evaluation kits.

To help you quickly deploy your application, the MicroBlaze processor includes three preset configurations analogous to familiar processor classes.

- Microcontroller: Suitable for running baremetal code
- Real-Time Processor: Deterministic real-time processing on an RTOS
- Application Processor: Embedded Linux capable

Experienced FPGA designers can use the Vivado® HL Edition design tools, including free WebPACK, to target the MicroBlaze processor to any supported Xilinx device at no extra cost. Starting from one of these configurable presets, further customization is possible from a variety of specific processor options and a catalog of driver-enabled drag n' drop peripherals such as PWMs, UARTs, DMAs, serial interfaces, to satisfy the specific needs of the application.

The MicroBlaze processor meets the requirements of many diverse applications including Industrial, Medical, Automotive, Consumer, and Communications markets.

### The Challenge:

#### The Need for Processor Scalability and Flexibility

- Scalable performance and flexible peripherals to meet ever-changing needs of cost-sensitive applications
- Strong life cycle support
- Robust tool flow

### The Solution:

#### Xilinx MicroBlaze Processor

- Flexible 32-bit RISC processor
- Three quickly-deployable preset configurations to meet microcontroller, real-time, and application processor requirements
- Familiar, Eclipse-based development tools
- Optimized for Xilinx FPGAs

## MicroBlaze CPU Key Capabilities Overview

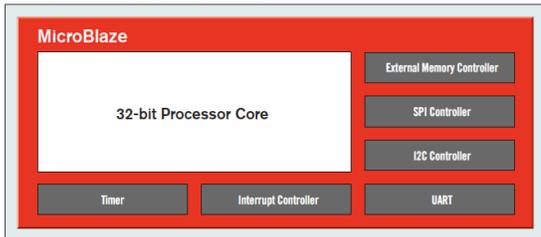
- Thirty-two 32-bit general purpose registers
- 32-bit instruction word with three operands, and two addressing modes
- 32-bit address bus, extensible to 64 bits
- Configurable single issue pipeline
- Optional FPU
- Lockstep capable
- TMR capable
- AXI4 interface
- Sleep mode and instruction
- Hibernate and suspend instructions

## Key Drag n' Drop Peripherals

- Multichannel DMA
- Ethernet subsystem
- Serial I/O (I2C, QSPI)
- Streaming FIFO
- HDMI Camera/Display Interface
- MIPI-CSI, MIPI-DSI
- Video DMA
- Timer / Watchdog
- Mutex / Mailbox
- UART
- USB 2.0
- GPIO
- PWM

## Processor Configuration Presets

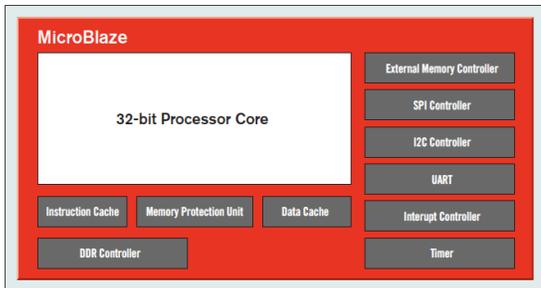
### Microcontroller 1.1 DMIPS/MHz



#### Microcontroller Preset (up to 200DMIPs)

- 32-bit Processor Core
- External Memory Controller
- SPI Controller
- I2C Controller
- UART
- Interrupt Controller
- Timer

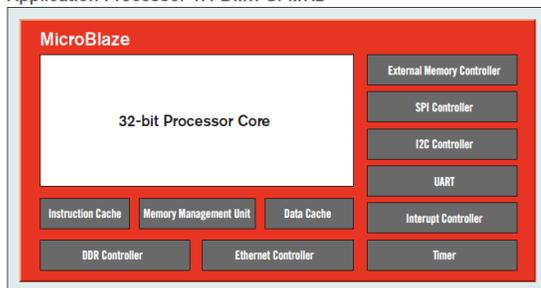
### Real-Time Processor 1.3 DMIPS/MHz



#### Real-Time Processor Preset (up to 200DMIPs)

- All Microcontroller Preset blocks
- Instruction Cache
- Memory Protection Unit
- Data Cache
- DDR Controller

### Application Processor 1.4 DMIPS/MHz



#### Application Processor Preset (up to 180DMIPs)

- All Real-Time Processor Preset blocks
- 32-bit Processor Core
- Memory Management Unit
- Ethernet Controller

## Take the NEXT STEP

Get started today with an evaluation kit and the [MicroBlaze Processor Quick Start Guide](#)

Join fellow MicroBlaze processor developers online at the [Xilinx Embedded Processor System Design Forum](#)



#### Arty S7 board - from \$89

- MicroBlaze processor preset capable
- 256MB DDR3L
- 16MB Quad-SPI Flash
- USB-UART Bridge
- 4 Pmod expansion connectors
- Arduino/chipKIT Shield connector
- Switches, buttons, LEDs
- 23K Total Logic Cells



#### Arty A7 board - \$99

- MicroBlaze processor preset capable
- 256MB DDR3L
- 16MB Quad-SPI Flash
- 10/100Mbps Ethernet
- USB-UART Bridge
- 4 Pmod expansion connectors
- Arduino/chipKIT Shield connector
- Switches, buttons, LEDs
- 33K Total Logic Cells



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