



ZMCSuite Datasheet

Application Development Kit for Industrial Embedded Measurement, Control & Motion

Key Features

- Graphical embedded system design with NI LabVIEW or C/C++
- Low power Hardware based on Analog Devices Blackfin BF548 Processor accessible by high-level software function blocks
- Efficient graphical debugging
- Preemptive, thread-safe Multitasking
- Deterministic real-time [μ s] services
- Comfortable drag & drop GUI with touch
- Scalable power for mW/Battery operation
- Ethernet, USB, CAN, SDCard

What is in the Box?

Development Hardware

- **ZMC**, industrial mixed-signal off-the-shelf platform for Measurement & Control
- Wide range of analog & digital process I/O
- Ready to use test devices such as push buttons, LED's, potentiometers and builtin function generators for productivity from day one
- Communications I/O including RS232/422,USB, Ethernet and CAN
- Builtin graphical user interface (GUI)
- Embedded file system on SD card

Schmid Engineerings ZBrain BSP for NI LabVIEW

- Real-time [μ s] services
- 200+ embedded function VI's on top of the default LabVIEW palette
- One high-level function block (driver) for every low-level feature
- Live hardware debugging in graphical context
- Target management
- Diagnostics, bootloader, flash tools
- Software frameworks running on all ZBrain platforms
- Step by step tutorial

National Instruments LabVIEW Embedded Module

- NI LabVIEW Full license
- Embedded Module for ADI Blackfin processors with built-in C-Code generator and link to the default Blackfin toolchain
- Blackfin optimized signal processing and analysis functions
- Project management and quality control tools

Analog Devices Blackfin Tools

- Analog Devices VisualDSP++ IDDE for Blackfin processors
- Analog Devices high-speed USB emulator (Optional)
- Royalty free real-time kernel VDK

Ask for upgrade and sidegrade services from other ZBrain development platforms.

Off the shelf hardware and software framework for rapid and efficient embedded system design, development and deployment. Faster results with extremely productive graphical system programming.

This industrial grade, complete development platform and testbench provides analog, digital and communication I/O to connect to a variety of process signals and other systems/devices. It offers higher productivity and system transparency to the team throughout the design cycle, supporting all product development phases «**Proof of Concept**», «**Rapid Prototyping**» and «**Series Development**».

The rugged hardware platform can be used in the operational system. While being an ideal learning, development and deployment platform for the non-embedded system expert, the experienced NI LabVIEW user is familiar from day one and gains easy access to high-performance and low-power microprocessor technology.



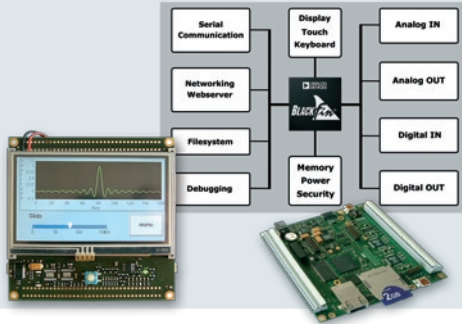
Graphical programming with NI's LabVIEW as a domain specific fourth generation language (4GL) combined with application oriented hardware empowers engineers and process specialists to concentrate on the system level functionality from day one.

High-level functions scaling from process I/O to signal processing, embedded webservice, mobile file systems and graphical user interfaces can be drag & dropped into the graphical code and wired into a self documented block diagram. This convenient approach offers space for creativity, allows for creating variants and produces revisable results in a matter of days, especially useful for rapidly changing requirements.

The ZBrain System, a modular low-power [mW] system for measurement and control, consists of several platforms for application specific areas such as «**Measurement, Control & Motion**», «**Sound & Vibration**», «**High-Speed Signal Processing**», «**Rugged PLC's**» and «**Mobile Metering**».

ZBrain Hardware Platforms for Analog Devices Blackfin processors

ZBrain low-power platforms combine Blackfin Processors with a variety of mixed signal I/O. Software applications can be conveniently ported between the PC and among these platforms to scale for CPU power and process I/O. New form factors and functions can be derived to adapt to customer specific requirements. The ZMCSuite includes the mixed-signal platform ZMC featuring:



- Analog Devices Blackfin BF548 Processor
- 64MB DDR SDRAM, 16MB Burst Flash, 2KB NV-FRAM
- 1xRS232, 1xRS422/485, 1xTWI
- Ethernet, CAN, USB
- SD-CARD
- 12x Analog In, 6x Analog Out
- 6x Digital In, 6x Digital Out
- 2xPulse in, 3x PWM out, 1xEncoder
- Color TFT 480x272, Touch
- Process I/O on rugged connectors

Embedded Application Programming Support

National Instruments LabVIEW Embedded for Microprocessors offers a clear and self-documented view of system and its interfaces. Embedding "C" gives transparent access to critical timing and customized hardware down to the assembly level. This bridges the gap to IRQ-Control, register mapping, DMA, GPIO, RTC, watchdog, memory access and other low-level hardware resources. LabVIEW integrates several programming models:

- Mathematical Analyses & DSP
- Timing control
- Graphical Debugging
- Simulation models
- Textual mathematics, formulas and "C"
- Function oriented data flow
- Statecharts (system behavior)

Drag & Drop Graphical User Interfaces

ZMCSuite supports the design & deployment of graphical user interfaces with easy to use face plates. Dragging and dropping allows the construction of a range of variants and strategies, from the simple process monitor to complex, multi-faceted menus. Custom-specific front panel bitmaps, designed in standard drawing tools, can be controlled directly from the embedded processor. User interfaces can comprise:



- Buttons, switches
- Input Fields
- Slider controls
- Rotary switches
- Displays
- Line plots
- Speedometers
- Bar graphs
- Spreadsheets
- Multicolumn lists
- Easy to use overlays
- Touch event feedback

Industrial Application Examples (Whitepapers)

- Rapid prototyping for low-power embedded measurement, control and motion
- Using LabVIEW for complete embedded application design and deployment
- Maintaining public railways with lower cost and improved safety
- Developing highly functional mobile applications in shortest times
- Rapid prototyping in robotics
- Graphical embedded system design empowers life saving spider robots
- LabVIEW 1000m below the waves - synchronized sampling of autonomous units through sound

Typical Applications

- Stationary and mobile devices
- Measurement instruments
- Closed-loop control systems
- Robotic motion
- Process controller & Rugged PLC's
- Measurement handhelds
- Battery supported systems
- Low-power applications (<1W)
- Embedded webserver
- Distributed measuring systems
- Small panel devices
- Compact user interfaces
- Outdoor measuring equipment

Datasheets

- Overview „Rapid Prototyping for Low-Power Embedded Measurement, Control and Motion
- ZBrain Platform Overview
- Datasheet ZMC reference platform
- Datasheet ZMCDevkit development kit
- Datasheet ZSV reference platform
- Datasheet ZHS reference platform
- Datasheet ZMobile
- Datasheet ZMDevkit development kit
- Datasheet ZBrain CPU Module
- Datasheet ZBrain BSP for NI LabVIEW

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