

AXISLib-X86

DSP & Math Libraries for Intel® Processors with Streaming SIMD Extensions (SSE)

Features

- 600+ DSP and Vector Math Functions
- VSIPL API Core 1.0+
- RSPL API for maximum performance
- Generic C libraries
- Development and production library builds
- Many hand optimized functions
- Target platforms:
 - Intel® 32- and 64-bit multi-threaded, multicore CPUs with SIMD extensions for Linux and VxWorks

AXISLIB-X86 from GE Intelligent Platforms is a family of high performance DSP and math libraries that deliver world class performance for the latest Intel multicore, multithreaded platforms with Streaming SIMD Extensions (SSE).

Portability

The Vector Signal Image Processing (VSIPL) open standard application programming interface (API) facilitates code portability across multiple CPU generations and architectures to support technology refresh during the entire program life cycle.

Performance

GE's RSPL API gives the programmer more control with lower CPU overheads to meet very challenging performance objectives.

Benchmarks

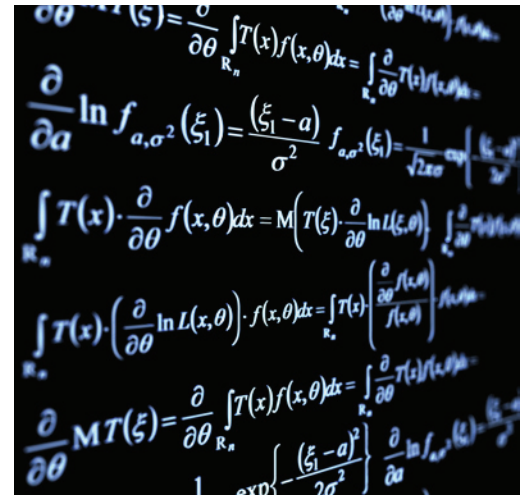
GE can supply performance benchmarks for a suite of common DSP functions on the latest Intel, NVIDIA GPGPU and PowerPC platforms.

Reduced cost of ownership

AXISLIB gets the best performance out of the deployed system without the need to hand craft libraries for each processor architecture thereby reducing project work load, cost of ownership and shortening time to solution.

Flexibility and performance tuning

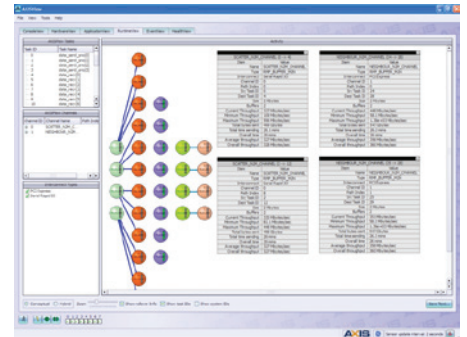
AXISLIB delivers more than 500 standard functions and our team of expert mathematicians and programmers can offer optimization services to meet the most demanding customer requirements.



AXIS Advanced Multiprocessor Integrated Software

AXISLIB DSP and Math libraries can be used on their own, or within GE's integrated multiprocessor application development framework that includes AXISFLOW inter-processor communication (IPC) middleware and AXISVIEW integrated GUI. These tools enable fast prototyping and application scaling across multiple CPUs, boards and system fabrics.

AXISView screen shot

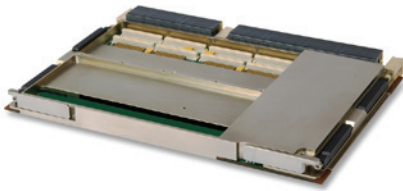


GE single board computers (SBCs) and multiprocessing boards leverage the latest high performance computing (HPC) architectures and switched fabrics onto rugged COTS form factors such as 3U & 6U OpenVPX. These platforms allow system integrators to move desk top and HPC applications into mission critical pay loads to meet expanded operational requirements for a range of intelligence, surveillance and reconnaissance (ISR) platforms.

Typical applications include radar, sonar, image processing, SIGINT, ELINT, EW and counter measures for deployed airborne, ground and naval platforms.



AXISLib-X86 – DSP & Math Libraries for Intel Processors with Streaming SIMD Extensions (SSE)



GE Intelligent Platforms' rugged SBC622 Intel Core i7 single board computer running AXISLib-x86 libraries is an ideal platform to support expanded ISR mission capabilities across a wide range of SWaP sensitive applications.

Features

Function Set	Description
Scalar	
Complex Scalar	40 functions for performing complex scalar math
Index Scalar	4 functions for indexing matrix elements
Random Number Generation	
Random Numbers	11 functions for generating random numbers, vectors and complex vectors
Vector and Elementwise Operations	
ElementaryMathematical	42 functions performing elementary vector math (sin, cos, tan, atan, exp, log, sqrt, etc.)
Unary Operations	48 functions for operating on a single vector or matrix
Binary Operations	60 functions for operating either two vectors or matrices or one vector and a scalar
Ternary Operations	24 functions for operations requiring three inputs
Logical Operations	20 functions for performing logical operations on vectors or matrices
Selection Operations	23 functions for selecting a subset of a vector or matrix
Bitwise and Boolean Logical Operators	16 functions for performing Bitwise and Boolean operations on vectors and matrices
Element Generation and Copy	40 functions for copying and generating vector elements
Manipulation Operations	28 functions for vector and matrix manipulation (e.g. scatter, gather and swap)
Signal Processing	
FFTs	42 functions for performing 1D and 2D FFTs (real-complex, complex-real, complex-complex in place and out-of-place)
Windowing	4 windowing functions (Blackman, Hanning, Kaiser, Chebyshev)
Filter	8 functions for FIR filtering
Convolution	8 functions convolutions (1D and 2D)
Correlation	3 functions correlations (1D and 2D)
Histogram	1 function histogramming
Linear Algebra	
Matrix and Vector Operations	75 functions for performing linear algebra on vectors and matrices
Linear System Solvers	45 functions

Performance Benchmarks: Sample Function Times*

Function	Description	Time in microseconds
vsip_ccfftip_f	1K complex-complex in-place FFT	5.74
vsip_ccfftip_f	256K complex-complex in-place FFT	1986
vsip_mtrans_f	256*256 real matrix transpose	155

* Results obtained on the GE XVB601 COTS 6U VME SBC with Intel i5 @ 2.53 GHz measured in μ s. Data in cache where possible. Please contact GE Intelligent Platforms for additional performance bench marks for a wide range of functions.

Ordering Information

AXISLib-X86-01M	Maintenance Agreement. Includes the right to use license and 1 x runtime license. Annually renewable.
AXISLib-X86-01R	Run-Time license. One run time license per CPU node.

GE Intelligent Platforms Contact Information

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Global regional phone numbers are listed by location on our web site at www.ge-ip.com/contact

www.ge-ip.com/axisdemo

