The Automotive Math and Motor Control Library (AMMCLib) set provides essential building blocks for rapid development of automotive embedded applications with high-performance arithmetic, trigonometric, digital signal processing and math functions. The AMMCLib is available as a production-ready precompiled or source code package.

A significant portion of the AMMCLib supports both sensor-based and sensorless motor control applications; it also assists with fixed-point fractional 16/32-bit and single-precision floating-point arithmetic. All AMMCLib functions come with MATLAB® and Simulink® bit-accurate models for model-based design, simulation and code generation supporting Embedded Coder®.
Auto AMMCLIB General Architecture Block Diagram

General Motor Control Library
- Park/Clark Transformation
- Inverse Park/Clark
- Space Vector Modulation
- DC Bus Ripple Elimination
- PMSM Decoupling
- BackEMF Observer
- Tracking Observer

General Function Library
- Sine, Cosine, Tangent
- Inverse Sine, Cosine, Tangent
- Hysteresis
- LUT, Ramp, Limitation
- First, Second Order IIR Filter

Mathematical Library
- Absolute Value
- Addition, Subtraction
- Multiplication, Division
- Right/Left Shift
- Type Conversion

Auto AMMCLIB Architecture for KEA Block Diagram

General Motor Control Library
- Park/Clark Transformation
- Inverse Park/Clark
- Space Vector Modulation
- DC Bus Ripple Elimination
- PMSM Decoupling

General Function Library
- Sine, Cosine, Tangent
- Inverse Sine, Cosine, Tangent
- Hysteresis
- LUT, Ramp, Limitation
- First, Second Order IIR Filter

Mathematical Library
- Absolute Value
- Addition, Subtraction
- Multiplication, Division
- Right/Left Shift
- Type Conversion
Auto AMMCLIB Architecture for S32Z/E and S32V Block Diagram

General Motor Control Library
Advanced Motor Control Library
• Park/Clark Transformation
• Inverse Park/Clark
• Space Vector Modulation
• DC Bus Ripple Elimination
• PMAC Decoupling
• BackEMF Observer
• Tracking Observer

Advanced Digital Filter Library
• Vector/Matrix Multiplication
• Kalman Filter
• FFT
• Linear System
• Solver
• Cholesky
• Decomposition
• RBF Interpolation

General Function Library
General Digital Filter Library
• Sine, Cosine, Tangent
• Inverse Sine, Cosine, Tangent
• Hysteresis
• LUT, Ramp, Limitation
• First, Second Order IIR Filter

Mathematical Library
• Absolute Value
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Automotive software General Block Diagram Block Diagram

SERVICES / APPLICATION SOFTWARE
MIDDLEWARE
OS / DRIVERS / SAFETY
HYPERVERSOR (if available)
ARM CORTEX CORE(S)
FIRMWARE / HW ACCELERATORS

View additional information for Automotive Math and Motor Control Library (AMMCLib).
Note: The information on this document is subject to change without notice.