Windows Class Library for
Your Original Motion Controller Development on EtherCAT

- Controls up to 64 axes with high-performing control functions as an EtherCAT master on a PC with a LAN port, without requiring any specialized interface board.
- Allows development of an original high-performance motion controller. There are more than 500 API functions, and the library supports up to 256 threads.
- Includes original EtherCAT master and RTX (Real Time Extension) licenses. Our “Soft Motion” technology has been proven in the field for more than 10 years, providing highly reliable motion control with outstanding cost effectiveness.

WMX2 System Overall View

- Windows Application (GUI)
- RTX OS
- Win32 Kernel
- WMX2 Motion API
  - WMX2 Engine
  - EtherCAT Stack
  - NIC Driver

PC (Panel PC)

LAN port

Servos (Devices)

WMX2 for EtherCAT: Main Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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<tbody>
<tr>
<td>Max. Number of Axis</td>
<td>64 axes with up to 64 channels</td>
</tr>
<tr>
<td>Interpolation Types</td>
<td>Linear (64 axis), Arc (2 axis), Helical (3 axis)</td>
</tr>
<tr>
<td>Acceleration, Deceleration Types</td>
<td>Trapezoidal, S-Curve, Jerk-Limited, Sinusoidal, Parabolic, Advanced S, Trapezoidal MAT, User specified profile. Acceleration and Deceleration profiles can be set separately</td>
</tr>
<tr>
<td>Motion Control</td>
<td>JOG, Homing, PTP, List Motion, Buffered API Execution Mode</td>
</tr>
<tr>
<td>Override</td>
<td>Change target position (PTP) / velocity (PTP/DVC) and profile parameters during motion</td>
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<tr>
<td>Sync Control (Master-slave control)</td>
<td>Max. 32 pairs (Multiple slave axes / Changing pairs supported). Gantry-axis control</td>
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<tr>
<td>Interpolation Cycle</td>
<td>Default: 1ms (can be changed depending on the system: 0.25ms – 4ms)</td>
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<tr>
<td>Supported Command Methods</td>
<td>Position / Velocity / Torque (Transparent mode is available for Torque and Velocity)</td>
</tr>
<tr>
<td>Position Compensation Features</td>
<td>Pitch error compensation, Backlash compensation, Straightness compensation</td>
</tr>
<tr>
<td>Max I/O points</td>
<td>11600/ 11600 (1KB for each). Supports most third-party EtherCAT devices</td>
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<tr>
<td>Event Functions</td>
<td>Event-based I/O and motion control. Ideal for SMT applications</td>
</tr>
<tr>
<td>Major EtherCAT Functions</td>
<td>CoE, FoE, DC Clock, Line/Star/Ring Topologies, Hot Connect, Network Management API</td>
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WMX2 Class Library

The WMX2 class library provides an intuitive programming interface for the development of powerful customized motion control applications in Windows for the EtherCAT servo network platform. Motion control applications developed by using the WMX2 class library are able to control up to 64 individual axes with high-performing functions.

WMX2 Major Functions

**Class WMXLib**
- StartCommunication: Start communication with the servo network (EtherCAT)
- StopCommunication: Stop communication with the servo network (EtherCAT)
- GetStatus: Get system status
- ExecEStop: E-STOP ON
- GetLastError: Get last error of device

**Class BasicMotion**
- StartPos: Position with trapezoidal profile
- StartJog: Start Jog command
- OverrideVel: Override velocity parameter
- StartLinearIntplPos: Linear interpolation
- StartCircularIntpl: Circular or arc interpolation

**Class JerkMotion / JerkRatioMotion**
- StartPos: Position with jerk-limited profile specified by p/s^3 or jerk ratio
- StartLinearIntplPos: Relative position linear interpolation
- OverrideProfile: Override profile parameters

**Class BasicVelocity**
- StartVel: Start velocity command
- Stop: Stop velocity command

**Class JerkVelocity / JerkRatioVelocity**
- StartVel: Velocity command with jerk-limited profile specified by p/s^3 or jerk ratio
- Stop: Stop velocity command

**Class BasicBuffer / JerkRatioBuffer**
- Start: Start buffer mode channel
- GetStatus: Get buffer mode state
- OverrideVel: Override velocity command
- OverridePos: Override positioning command

**Class EventControl**
- SetEvent: Set motion event
- SetTouchProbe: Set touch probe channel parameters
- SetHardwareTouchProbe: Set hardware touch probe parameters
- SetPSOConfig: Set position synchronous output parameters
- SetPlannedVelOverrideConfig: Set planned velocity override parameters

**HARDWARE REQUIREMENTS / DEVELOPMENT ENVIRONMENT**

<table>
<thead>
<tr>
<th>OS</th>
<th>Windows 7 (32bit / 64bit)</th>
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<tbody>
<tr>
<td>CPU / RAM</td>
<td>CPU: Core2 Duo 1.8GHz or later / RAM: x86: 1024MB, x64: 4096MB</td>
</tr>
<tr>
<td>IDE</td>
<td>Visual Studio (C/C++) x86: 2008/2010/2012 (C/C++) x64: 2010/2012, Microsoft.NET Framework 2.0 or later</td>
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<td>Compatible NIC</td>
<td>RTX supported NIC for EtherCAT (<a href="http://www.softservo.com/data_sheets/EtherCAT_NIC.pdf">http://www.softservo.com/data_sheets/EtherCAT_NIC.pdf</a>)</td>
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Contact Information

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