# Deliver precision motion positioning with affordable industrial-grade software deployed on industrial PCs

KINGSTAR Motion is a software-based motion control solution that creates PC-based smart machine controllers with premium precision and performance. Using a single industrial PC enhanced with the power of a real-time operating system (RTOS) for Windows, enabled by a plug-n-play approach and leveraging the CANopen over EtherCAT standard, engineers can build motion controllers that protect their intellectual property, address their current market needs and deliver on the full promise of Industry 4.0 & IoT.
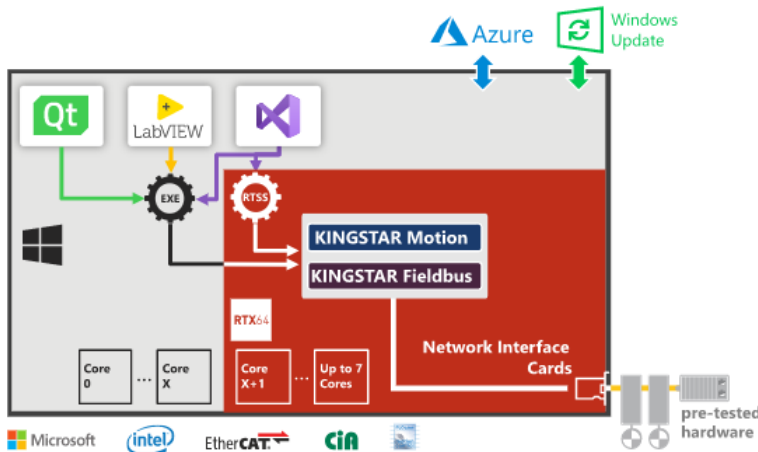
KINGSTAR Motion is an add-on component to KINGSTAR Fieldbus and a key component of the KINGSTAR Machine Automation Platform used to build or integrate smart machine controllers that are IoT-Ready.

Supported Motion Features

- PLC Open standard libraries
- CAN Drive Profile
- Independent Algorithm for each axis
- Basic Motion – Single-axis Point to Point motion
    - Absolute, relative, jog and buffer moves
- Synchronization
    - Caming, Gearing, Gantry
    - Group motion such as linear moves, 2D and 3D circular moves and helical moves
- Interpolation (Look ahead / Blended Motion)
    - Continues velocity between buffer moves with transition such as corners

Tools: Tuning, Scope

Multiple IDEs for motion control application development

Design, develop, and integrate motion control applications with software-only PC-based controllers for industrial machines

Key Product Features

- Motion control API for real-time precision, and accessible from Visual Studio,
- Built on IntervalZero's latest RTX64 RTOS for real-time determinism. Transform Windows 10 IoT into an RTOS and use Microsoft's Azure Cloud as a backend for motion control needs

- Scan the EtherCAT fieldbus for list of added or existing slave devices and automatically configure for use, without starting the master
- Use OC UA for secure, data communication
- Integrate with KINGSTAR PLC powered by Axel to simplify app design and development
- Enable coordinated motion at 125 microsecond intervals

Configuration Tool

- Configure KINGSTAR settings
  - Connection settings
  - Axis and IOs settings
  - Test
- Tune axis
  - Tweak the PID using KINGSTAR to optimize the control system
  - Step mode
  - T&S Curve mode
  - Constant speed
- Generate code for KINGSTAR parameters
  - Export all settings you configured and tested in C++ code
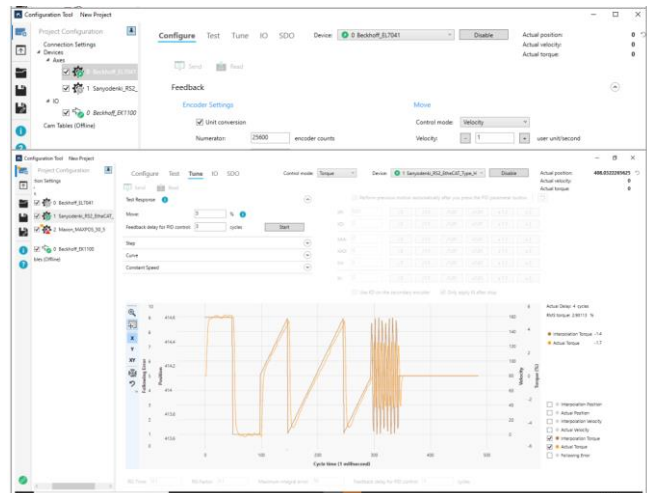
Part of the KINGSTAR Machine Automation Platform

The KINGSTAR Machine Automation Platform is an open and standards based. Integrated platform that enables motion control and machine vision engineers to design, develop and integrate precision motion control and machine vision applications with either KINGSTAR's soft motion library and software PLC or 3rd party software of their own choosing. It is built on the foundation of EtherCAT and a real-time 64-bit Windows operating system. And is a complete platform for functional integration.

CANopen Over EtherCAT
Replace proprietary network protocol and I/O hardware with PC NIC and Ethernet cabling.

Auto-Configuration
Utilize pre-integrated EtherCAT servos drives and I/O devices for plug-and-play compatibility.

Hard Real-Time Determinism
Use IntervalZero's RTX64 hard real0time SMP aware subsystem for determinism on Windows.

Single IDE
Develop Visual Studio custom applications using managed code .NET framework, native Windows, or RTX64 libraries in C or C++.

User Interface
Create powerful UIs with Windows Interface (HMI).

Standalone Controller
Consolidate, run and synchronize multiple independent systems, across multiple core, on a Windows and RTX64 processor system.