

KPA Motion is a software library for handling moving parts of machines or robots in a controlled manner. It is compliant with PLCOpen specification and does not rely on specific drive model or vendor, offering a standard motion interface which can be used across various systems.

## Key Features

- Linear and coordinated motion control.
- Position, velocity and torque control even for drives with limited controlling functions.
- Time-optimal trajectory generation on the fly within one control cycle.
- Functional blocks according to PLCOpen Part 1 and Part 4 standards
- CiA402 and Sercos drive profiles supported, easy adaptation to any custom profile.
- Native EtherCAT support due to own-developed EtherCAT Master.
- Virtualization with V-REP software

## Versatility and Flexibility

KPA Motion library is a tool that introduces necessary motion control capabilities into customer's control application or development environment. Due to its versatility, various application requirements can be covered:

- Linear movements, single or multiple axis
- Synchronized, coordinated movements, with several types of axis coupling including gearing and camming
- Complex synchronized movements using kinematics model

KPA Motion applies well to unrestricted use in multi-threaded applications and allows for interpolated unlimited axis machining, among other functions. Based on the current state of motion and kinematic motion constraints, it calculates an exact location for the new motion on the time-optimal trajectory. This serves to reach the desired target position with a required speed vector.

## Industry Standards

KPA Motion is based on PLCOpen specification with some extensions. It implements functional blocks as defined in PLCOpen Part 1 (Linear motion) and Part 4 (Coordinated motion). For controlling drives, standard profiles CiA402 and SERCOS are supported, which makes KPA Motion compatible with most of drives on the market.

## Core Features

- Parallelizable for multi-core-CPU's and optimized for low end CPU's
- Simple integration of custom bus systems
- No axes limits by design just by CPU power
- Short reaction due to close integration with EtherCAT Master
- No functional blocks limits and blending limits
- Jerk-limited, time optimal profile generation
- Dynamic and static parametrization
- Effective feed forward control

## Integration

KPA Motion is implemented as "C" library and is not bounded to any specific CPU architecture. Moreover, its architecture includes operating system abstraction layer which enables adaptation to any operating environment. KPA Motion is already supporting Microsoft Windows, Linux, INtime and QNX, with more operating systems to come.

## Support, Assistance, and Custom Development

As a supplemental service, our team of experienced developers is ready to help you with integrating KPA Motion into your design environment or assist in creating motion control application.

### Application Architecture

