

# Motion control library supports CANopen drives

**Zub, a daughter of Maxon, has added kinematic commands to its Aposs path editor and its motion control library. The software supports among others X/Y tables, Scara and delta robots.**

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A typical application of motion control systems by Zub is the storage system for pharmacies provided by Apostore (Source: Apostore)

The kinematic library contains commands for translation, rotation, scaling, reflection, and stretching. These commands considerably facilitate and speed up the programming of complex path curves. Programmers do not need to work out the transformations, but only define them. The commands perform the conversion of path coordinates to machine coordinates.

The software can be used for the company's MACS5 drive controllers featuring CANopen connectivity. The user does not need to bother about the conversion to axis curves, since the drive controller interpolates the trajectory during execution and performs the transformation to axis coordinates. The path curves are created with the graphic Aposs path editor. It is intended for initial design and layout to the inspection of results in the production environment.

From a series of 'fixed points', the editor generates a smoothed path leading through the fixed points. 'Smoothed' means that speed and acceleration do not change on reaching and leaving the fixed point. The path editor supports the 3D path open cyclic, closed cyclic and non-cyclic by, for example, ensuring that in cyclical paths the speed and acceleration at the start and end of the path match.

Besides the paths defined by spatial (X, Y, Z) axes, the path editor also supports non-cyclic axes as required for rotating tools and controlling laser intensity. The MACS5 drive controllers are employed according to the given kinematic type - Cartesian, H-Bot, Scara, Delta, CoreXY or Stewart platform. Since the dynamic curve computation and speed variation occur in real time during traversal, the path curves can be modified on the fly, either holistically for product variants (scaling, rotation, mirroring) or only at individual points.

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The MACS5 drive controllers are also used in the modules for print finishing by Hunkeler; the paper moves at speeds of up to 220 m/min out of printers and is perforated, punched, cut, and folded "on-the-fly" (Source: Hunkeler AG)

The MACS5 series of logic and drive controllers was already released in 2018. The MACS5-Compact and MACS5-AMP-3-Lite versions are suitable for one to up to three axis. The drives for the various travel and stroke movements are controlled and moved synchronously, position data and travel profile are changed "on the fly" without intermediate stop, several CANopen servo amplifiers are controlled and monitored simultaneously, and the grippers are monitored by means of position and sensorless torque/power control.

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