Key Features

Motion Function



Home Return Modes

To ensure motion repeatability, the mechanism must reset to the zero-position via the dedicated sensor point “ORG”, normally completed by combining “ORG”, “EL” and “Index” signals.



Position Override

After movement begins, the position target can be changed on-the-fly even if the motion reaches maximum velocity.



Helical Interpolation

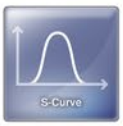
If the start point and destination of a circular interpolation movement lie on different planes, a helical function is required to directly regulate the movement.



Speed Override

Changes rotation speed on-the-fly while the axis is running.





T-Curve / S-Curve Velocity Profile

Acceleration and deceleration times are programmable, and rates can be set individually, with S-curve motion compensating for generated mechanical vibration.





Linear and Circular Interpolation

To complete multidimensional motion, any 2, 3, or even all 6 axes are required for linear interpolation and any 3 axes can execute circular interpolation.



Continuous Move (Contouring)

Continuous movements comprise a range of linear and circular interpolated paths. Point-Table functions support hundreds of paths to smooth the velocity of continuous movement supported by included velocity planning software..



Synchronization

Simultaneous start/stop can be executed on multiple axes in one card, or multiple axes across multiple cards, using software or external input signals. This feature is especially beneficial for complicated motion patterns requiring absolute synchronization of multiple axes.



Path Blending

Anticipating sharp corners and small arc path execution, path blending is required to decelerate automatically and ensure smoothness of the velocity at junctions of two linear paths.



Velocity Planning

Velocity planning is required to smoothly implement continuous movement and reduce vibration. The velocity of each path is generated automatically according to corner angles of complete paths.

Program Language



Program Download

To ensure real-time control performance, programs are downloadable into onboard processors, with support for up to 8 tasks.



IEC 61131-3

The third section of the open international standard IEC 61131 for programmable logic controllers, CODESYS (provided by 3S enterprise) is integrated into specific ADLINK motion controllers.



Virtual Axes

To implement multi-axis synch or following motion, virtual axes act as a model to synchronize the motion of selected axes.



G Code

Commonly used designation for the most widely used CNC-like programming language, with many implementations. Used mainly in automation, it is part of computer-aided engineering. G-code directs CNC where to move, how fast to move, and along what path.

Control



PID Plus Feedforward Gain Control

All servo applications require specified safe and stable PID loop parameters in order to perform position control, ADLINK Softmotion provides a proportional-integral-derivative (PID) algorithm with adjustable acceleration and velocity and feed-forward gain to simplify servo application development..



Auto-tuning

In order to reduce tuning efforts and acquire accurate PID parameters, auto-tuning applications are provided in ADLINK dedicated software, allowing conditions to be configured according to real application requirements.



Frequency Response Analysis

A bode plot is a graph of the transfer function of a linear, time-invariant system versus frequency, plotted with a log-frequency axis, to show the system's frequency response and find the cutoff frequency defining the 2nd notch filter to reduce resonance.

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Application Function



Electronic Gearing
To implement multi-axis synchronization, this function sets a ratio between multiple slave axes and one master axis to simplify mechanism. One example is a system where two rotating drums turn at a given ratio to each other.



Pitch Compensation
Irrespective of the type of ball screw system used, there always exists the non-linear section of the whole ball screw that affects the accuracy of overall motion. This function compensates for pitch error in real time.



Position Compare & Trigger Output
Up to 20MHz encoder input frequency, hardware-based high-speed position comparison, and trigger output, ideal for AOI applications.



Encoder Event
To accelerate the throughout of entire motion system, the encoder event is used to triggers other axis movement immediately when the target axis achieves the planned position.



Automatic Backlash Compensation
Upon direction change, outputs backlash corrective pulses before sending commands. This function only supports single-axis movement.



PWM Generation
In general PWM generates pulse up to 25MHz with either fixed frequency or fixed duty-cycle modes, and is suitable for laser, and dispensing applications.



Coordination Transformation
Often used with robotic systems, it is one of the most important features of an advanced control system for articulated robots, providing the ability to transform workspace coordinates to corresponding joint coordinates.



Electronic CAM
With electronic cam, a slave axis follows a profile that is a function of the master position. This profile need not be salted, but it must be an animated function, electronically commanding one axis position as a function of another axis with a CAM table and fire I/O during the move.



Position Latch
The latch function captures the instant counter value of one certain axis when the latch signal activates. The LTC channel is used to receive the latch pulse and the latch function is implemented with hardware.

Signal



DSP
Digital Signal Processing allows time-critical motion control, multiple axis synchronization, and standalone control in a variety of applications.



SIN-COS Encoder Input
To receive higher resolution of feedback position, SIN-COS encoders appear in advanced motion systems with up to 12 bit conversion rate.



Manual Pulsar Input Interface
Some motion control solutions provide an interface that connects manual pulsar input devices, which can be used to move the axes.



Hardware Emergency Input
A safety protection feature providing emergency shutdown in case of malfunction.



Digital Encoder Input
Most feedback signals can be classified as digital pulse types consisting of A, B phase and index signals. Normally the frequency of digital encoder can be supported up to 20MHz (@4xAB phase).



Analog Output / Analog Input Channels
Some products offer analog output/ input channels for voltage signals.

Connectivity



Ethernet Connectivity
Considering the cost and flexibility of overall automation equipment design, Ethernet connectivity allows localization of movement or I/O modules to save space and extend control through adding the modules.



Field Bus Connectivity
Field Bus Connectivity localizes motion of I/O modules to save space and extend control through addition of modules, with dedicated I/O and Motion provided as “HSL” and “MNET” respectively.

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