

Inspiring Motion
Since 1988

Elmo Gold Maestro Version 1.1.2.0

Marketing Release



October 2013

www.elmomc.com

Elmo
Motion Control

Summary of New Features

With the latest release of our firmware for Gold Maestro (G-MAS) motion controllers, we introduce powerful new features that make complex motion tasks easier to program and faster to implement.

New Kinematics with Gold Maestro – Delta Robot Support

The Gold Maestro fully supports Delta robots being used in many areas of industry today. After simply defining the Delta robot part lengths, you are ready to run.

Supported motions types include Linear, Circle, Polynomial, Table Spline and Table PVT.

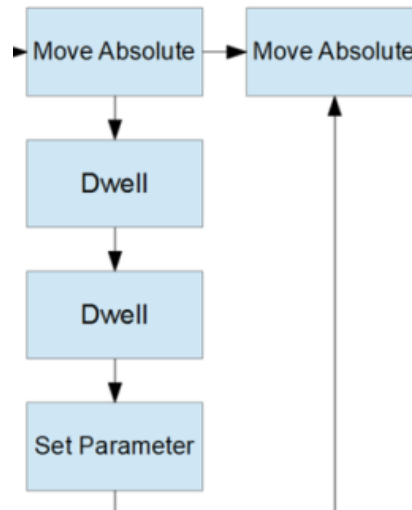
Supported motion limits handling includes both axis (ACS) and machine (MCS) limits.

Enhanced Administrative Function Block (FB) Support

Using the administrative FB mechanism, the User can precisely control and synchronize motion parameters, IOs and maximum torque in real time. Administrative FBs operate in parallel to the existing motion blocks.

With this update, G-MAS supports the following new functionality for administrative FBs:

- **WriteGroupParameters.** Enables use of up to 5 parameters in a single FB call between multiple motion blocks. The User can precisely modify G-MAS parameters between motion segments. The parameters need not belong to the axis in motion, for example, we can modify the IO of Axis2 as soon as Axis1 blends its motion to an ongoing FB.
- **Dwell.** Introduce a precise wait between ongoing FBs. In the following example, the second MoveAbsolute will not be called until the two dwells and SetParameter are finished:



- **WaitUntilCondition.** Similar to Dwell, but uses logic to wait until a specific condition is fulfilled. The conditions belong to a list of parameters supported by the G-MAS. The User can use common test operators (such as equal, low, higher, mask, etc.) when performing the wait, and the condition need not occur on the axis being operated on. This feature provides the ability to synchronize multiple axes (not necessarily in the same group) to begin motion together. It also provides the ability to synchronize multiple G-MAS devices on a network, beginning motion only when a specific bit on a shared IO is raised.

Enhanced Error Correction Support

The Gold Maestro can correct both single and multi-axis positions in real time, based on correction data using up to 6 predefined correction tables. Superimposed management of error correction is fully supported.

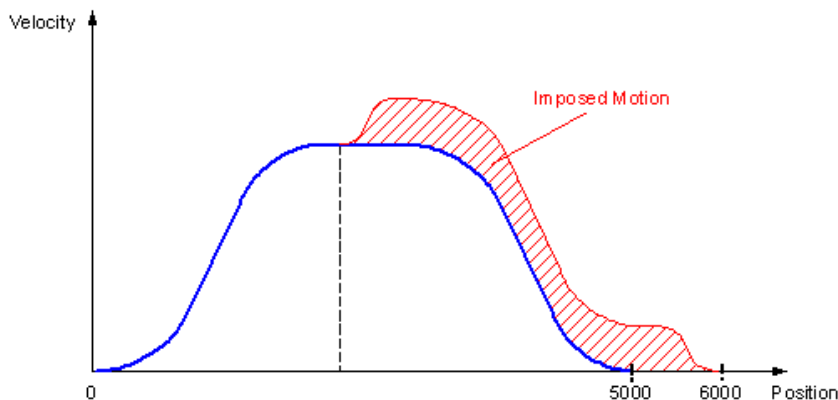
Up to three dimension corrections are supported, including:

- **2D error correction** provides a correction value on the basis of a standard two-dimensional grid (x,y), defined as a function of any two axes positions.
- **3D error correction** is similar to 2D error correction, but enables use of multiple, layered two-dimensional grids.

Flying Vision™ with Superimposed Motions

Elmo's Flying Vision™ significantly improves machine throughput using the superimposed motion capabilities of the Gold Maestro.

Gold Maestro enables Flying Vision by superimposing motions (that is, adding another profiler on top of an ongoing motion in real time). Flying Vision is used mainly when the exact end position of a motion is unknown and needs to change during the motion, without crossing the initial location. With this functionality, the User can change the target position without changing the current FB.



For example, when a scanning camera performs a capture and calculates its position while the axis is still in motion. A superimposed motion is executed, changing the camera end position on-the-fly. A newly calculated position, velocity and AC/DC is added to the ongoing motion.

Additional EtherCAT Drive and IO Support

Extensive work was performed to fully support additional slave devices with the Gold Maestro EtherCAT master. Many common industry slave devices are included in this update and are also fully supported by Elmo Application Studio (EAS).

Ethernet/IP C++ Libraries (Including IEC), TCP/IP and UDP C++ Libraries

Both common and legacy C++ libraries have been enhanced to further streamline the programming methods used and ease access to advanced network functionality.

A Gold Maestro drive is easily added to a standard Ethernet/IP network by simply defining it as an Ethernet/IP adapter. Ethernet/IP libraries include tagging for IEC function blocks. A User does not need to be familiar with CIP or Ethernet/IP interface definitions.

TCP/IP and UDP legacy functions are also provided via C++ libraries. A User who is not familiar with (or does not want to use) industry standard protocols such as EIP or Modbus can easily use EIP/TCP/UDP protocols without prior knowledge of Socket interfaces.

Fast Reference to Drive Functionality

The Gold Maestro now supports a fast referencing capability to enable the G-MAS to send an additional position reference to a drive. The position reference can specify the actual or target positions for axes in the system, as well as a position along a Group axis path.

Fast referencing can be used for numerous purposes, including:

- Additional Auxiliary Profiler to drive.
- Advanced Gain Scheduling, for position cross-coupling between axes.
- Touch Probe.

These new features are only a part of Elmo's advanced motion control capabilities. For a complete functionality description of Gold Maestro line, please go to [G-MAS Web Page](#) and [Elmo's Motion Control Capabilities](#) section on Elmo's web site.