



# Kinetix 6000 V13 Firmware Release v1.80

## Catalog Numbers:

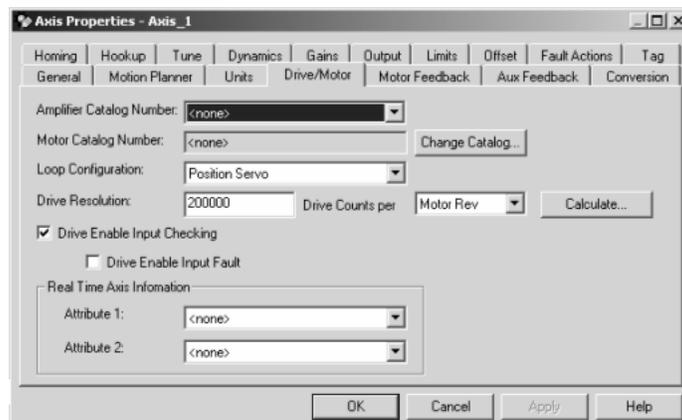
Kinetix® 6000 Multi-Axis Servo Drives			
IAM (230V)	IAM (460V)	AM (230V)	AM (460V)
2094-AC05-M01	2094-BC01-M01	2094-AM01	2094-BM01
2094-AC05-M02	2094-BC02-M02	2094-AM02	2094-BM02

## Enhancements

The following enhancements correspond to firmware release v1.80 of the Kinetix 6000 Multi-Axis Servo Drive system when used with v13 RSLogix™ 5000 software.

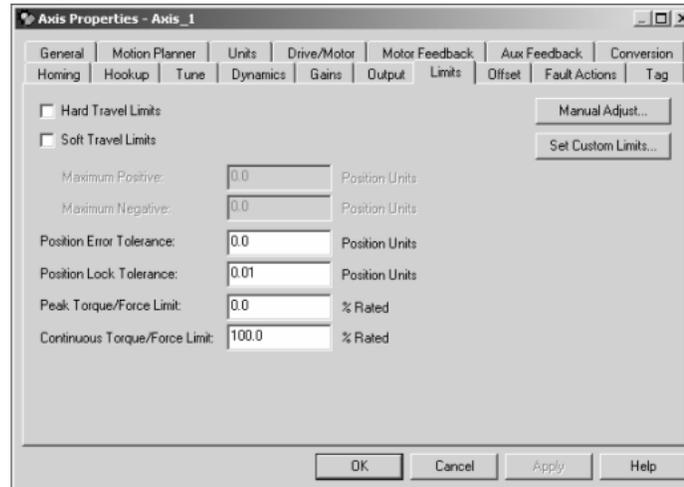
### Drive Enable Input Checking

The Drive Enable Input Checking check box has been added to the Axis Properties dialog box (Drive/Motor tab). This new enhancement is used to enable/disable the drive's monitoring of the hardware drive enable input. When checked (default) a hard drive enable input signal is required. When unchecked (disabled), a hard drive enable input signal is *not* required. This eliminates the need to hardwire the input for normal drive operation, and complete drive enable and disable sequencing is provided by the soft drive enable.



## Continuous Current Limit

The Continuous Torque/Force Limit field has been added to the Axis Properties dialog box (Limits tab).



In this field, data entry is limited to integer values between 0-200, indicating a 0%-200% range. The drive adjusts the motor's continuous current rating based on this value.

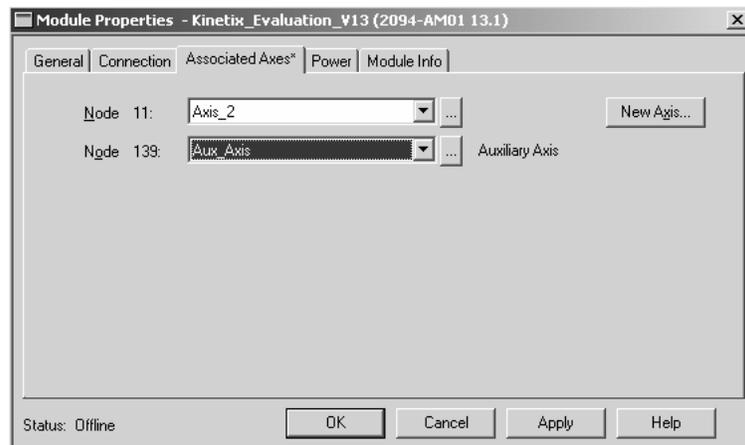
### IMPORTANT

A custom motor database with a suitable continuous torque/force limit is required to use this feature above the 100% setting. The standard motor database shipped with the RSLogix 5000 software restricts the Continuous Torque/Force Limit to 100%.

Note: Increasing or decreasing the motor continuous current rating does not change the drive's continuous current limiting.

## Feedback Only Axis

The feedback only axis mode has been added to the Module Properties dialog box (Associated Axes tab). This new enhancement allows the auxiliary feedback port on an IAM or AM to be configured as a feedback only axis. With this feature, each IAM or AM can be configured to appear as 2 axes/nodes on the SERCOS™ ring. The base node is a servo axis utilizing the motor feedback, and the base node plus 128 is a feedback only axis utilizing the auxiliary feedback port.



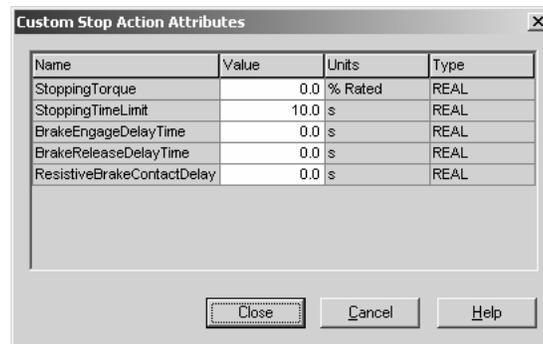
When using the auxiliary axis in the feedback only axis mode, the following restrictions apply:

- Setting the Homing Sequence selection to Marker is not supported for an SRS or SRM encoder since these devices do not have a physical marker pulse.
- An axis must be associated with the main axis as well as the Auxiliary Axis on the Associated Axis tab of the Module Properties dialog.
- The Test Marker.. function on the Hookup tab will fail when testing with SRS and SRM encoders due to the lack of an integral marker pulse in these feedback devices.

## Resistive Brake Module

Support has been added to RSLogix 5000 to control an external Resistive Brake Module (RBM) on the Kinetix 6000. The RBM sits between the drive and the motor, using an internal contactor to switch the motor between the drive and a resistive load. This contactor is controlled by the RBM output (DBRK±, BC-1 and -2) on the Kinetix 6000.

The ResistiveBrakeContactDelay field has been added to the Custom Stop Action Attributes dialog box, under the Fault Actions tab in RSLogix 5000. The following figure illustrates the new field.



The RBM contact delay is the time it takes to fully close the contactor across the motor lines (U, V, and W). In order to prevent electrical arcing across the contactor, the drive power structure is not enabled until after the RBM contact delay has expired.

### IMPORTANT

The RBM contact delay time is variable (depending on RBM model) and must be set by the customer.

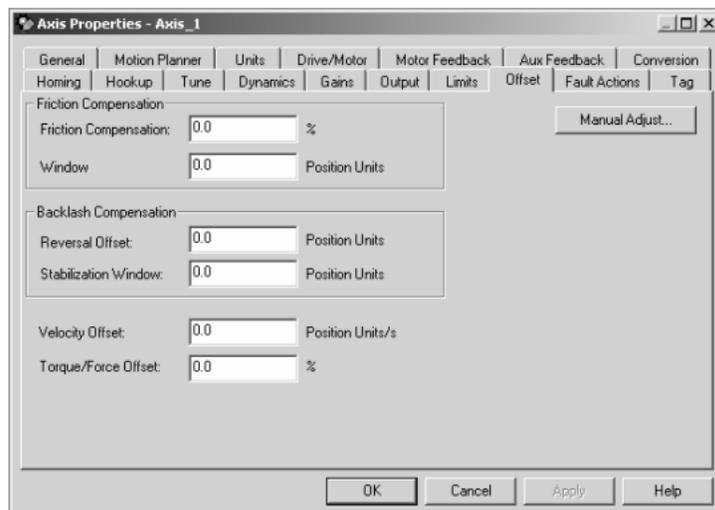
Note: Support for this feature is also available in v12 firmware (v1.071) but the RBM contact delay (parameter *x641*) must be set using DriveExplorer™ software.

## Friction Compensation & Backlash Compensation

Support for Friction Compensation and Backlash Compensation have been added to the Axis Properties dialog box (Offset tab).

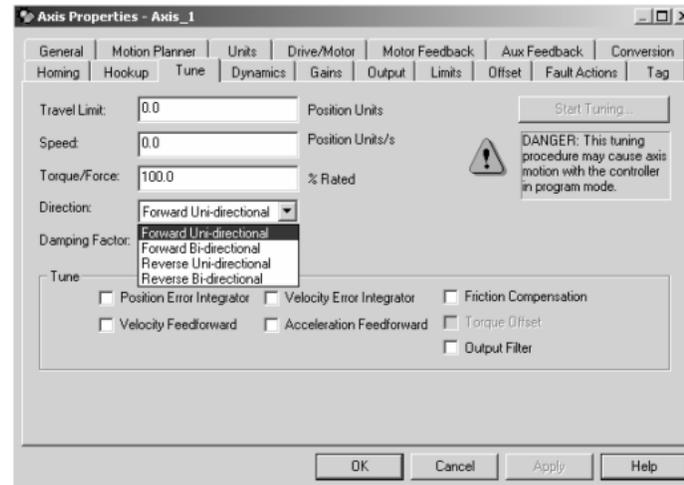
A non-zero Friction Compensation Window value has the effect of softening the Friction Compensation as it is applied to the servo output and reducing the dithering effect that it can create. This generally allows higher values of Friction Compensation to be applied.

The Backlash Stabilization Window attribute is used to control the backlash stabilization feature in the servo control loop. With a Stabilization Window value commensurate with the amount of backlash in the mechanical system, the backlash stabilization algorithm is very effective in eliminating backlash-induced instability while maintaining full system bandwidth.



## Bi-Directional Tuning

Support for the selection of a bi-directional tuning has been added to the Axis Properties dialog box (Tune tab).



## Dual-slot Addressing

Each slot on the power rail is assigned a SERCOS node address and the IAM address (or starting point) is determined by the IAM thumbwheel setting. Double-wide AMs use the address in the left-most slot that it occupies. For example, if a power rail has a double-wide IAM with a SERCOS node address of 10, then the AM next to it will have an address of 12.

## Unlogged Module Fault

An AM will generate an E73 (Backplane Communications) fault if not logged (recognized by the IAM) after 45 seconds. This will help diagnose a bent pin on the backplane connector.

## Flash Node Address upon Power-up

The SERCOS node address will flash on the 7-segment display upon power-up, prior to phase-up of the SERCOS ring.

## Locked Setpoint Stopping/Starting

The drive will no longer switch to local velocity mode during a starting or stopping sequence while the Loop Configuration is set to a positioning mode. The drive will not switch to local velocity mode if a stop sequence is issued (i.e. HW/SW enable, fault action, completion of hookup) and the drive's position loop is active. In this case, torque and velocity offsets remain active.

## Restrictions

The following restrictions apply when using RSLogix 5000 in conjunction with a ControlLogix<sup>®</sup> (1756-MxxSE) or SoftLogix<sup>™</sup> (1784-PM16SE) servo module, and the Kinetix 6000 servo drive.

- When using a Dual Loop Configuration, the resolution units setting (Rev, Inch, Millimeter) on the Motor Feedback and Aux Feedback tabs of the Axis Properties dialog must be the same.
- After an SSV of a drive parameter, wait at least 3 ms after the ConfigUpdateComplete bit is set before acting on the result of the setting.

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