

# Acceleration Control Configuration Attributes

These are the acceleration control configuration attributes associated with a Motion Control Axis.

## Load Observer Configuration

Usage	Access	T	Data Type	Default	Min	Max	Semantics of Values
Optional - C	Set/SSV		USINT	0	-	-	Enumeration 0 = Disabled (R) 1 = Load Observer Only (O) 2 = Load Observer with Velocity Estimate (O) 3 = Velocity Estimate Only (O) 4 = Acceleration Feedback (O) 5-255 = Reserved

The Load Observer Configuration attribute configures the operation of the Load Observer. The Load Observer dynamically measures the active load torque applied to the motor load for the purpose of load disturbance compensation. Selecting the Velocity Estimate configures the observer to dynamically estimate velocity based on an internal model of the motor and load. When Velocity Estimate is selected, this signal is applied to the velocity loop to provide superior control loop performance. The Velocity Estimate may be used in combination with the Load Observer by selecting Load Observer with Velocity Estimate. The Acceleration Feedback configuration applies acceleration feedback to the control loop structure to improve stability and performance. In effect, Acceleration Feedback is like adding virtual inertia to the motor thus reducing the Load Ratio.

## Load Observer Bandwidth

Usage	Access	T	Data Type	Default	Min	Max	Semantics of Values
Optional - C	Set/SSV	T	REAL	FD	0	$\infty$	Loop Bandwidth Units

The Load Observer Bandwidth attribute determines the proportional gain, Kop, of the load observer. This value represents the unity gain bandwidth of the load observer.

## Load Observer Integrator Bandwidth

Usage	Access	T	Data Type	Default	Min	Max	Semantics of Values
Optional - C	Set/SSV	T	REAL	0	0	$\infty$	Loop Bandwidth Units

The Load Observer Integrator Bandwidth attribute determines the load observer integral gain, Koi, that together with the Kop, multiplies the integrated error signal within the observer. This value represents the bandwidth of the integrator beyond which the integrator is ineffective. A value of 0 for this attribute disables the integrator.

## Load Observer Feedback Gain

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Usage	Access	T	Data Type	Default	Min	Max	Semantics of Values
Optional - C	Set/SSV		REAL	0.5	0	$\infty$	

The Load Observer Feedback Gain attribute is a value that, when configured for Acceleration Feedback, multiplies the Load Observer's acceleration output signal before applying it as feedback to the acceleration reference summing junction. The output of this gain term is the Load Observer Acceleration Estimate signal. If not configured for Acceleration Feedback operation, this attribute has no effect.

## Acceleration Limit

Usage	Access	T	Data Type	Default	Min	Max	Semantics of Values
Optional - D	Set/SSV		REAL	0 FD		$\infty$	Accel Units

The Acceleration Limit attribute defines the maximum acceleration (increasing speed) allowed for the acceleration reference value into the acceleration summing junction. If this acceleration limit value is exceeded, the device responds by clamping the acceleration reference to this limit and setting the Acceleration Limit status bit.

## Deceleration Limit

Usage	Access	T	Data Type	Default	Min	Max	Semantics of Values
Optional - D	Set/SSV		REAL	0 FD	0	$\infty$	Accel Units

The Deceleration Limit attribute defines the maximum deceleration (decreasing speed) allowed for the acceleration reference signal into the acceleration summing junction. If this deceleration limit value is exceeded, the device responds by clamping the acceleration reference to this limit and setting the Deceleration Limit status bit.

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