

Introduction

This application note outlines the current limiting behavior of *ADVANCED* Motion Controls analog servo drives for various levels of commanded output current. This document applies to analog servo drive models beginning with an A, B, or a number (for example, AZB20A8, B40A40, BE30A8, 30A20AC, etc.)

Note: This document does not apply to Sinusoidal (S-Series) or Direct PWM (“BD” and “DD”) drive models.

ADVANCED Motion Controls analog servo drives have built-in peak and continuous current limits. For example, a BE30A8 has a maximum peak limit of 30 amps, and a maximum continuous limit of 15 amps. The drive hardware limits the current output to these levels to protect the drive from damage.

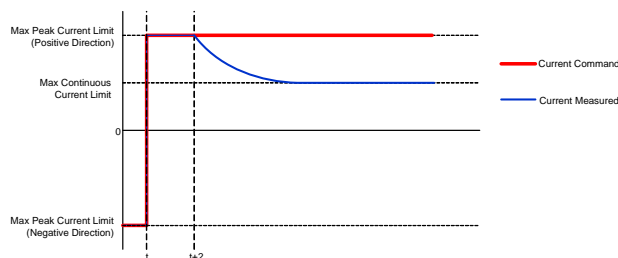
Note: The maximum peak and continuous current limits can be reduced by DIP Switch or potentiometer settings. Consult the drive datasheet for details.

Maximum Peak Current

The maximum peak current output level on an *ADVANCED* Motion Controls analog servo drive can be sustained for about 2 seconds.

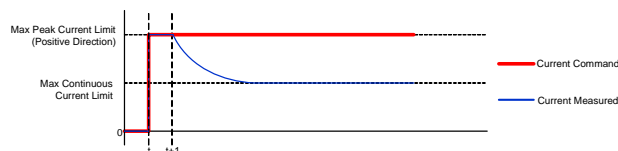
To actually achieve maximum peak current output for 2 seconds requires the current command to fully swing from peak in one direction to the other.

In the diagram below, current is commanded from the maximum negative peak value to the maximum positive peak value. The maximum peak output current is sustained for 2 seconds.



For most applications, it's a rare occurrence to fully swing from peak in one direction to the other. It is more likely the drive will be commanded from zero to max peak current.

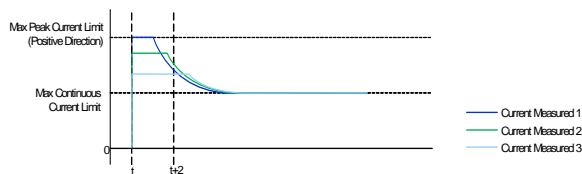
Under this condition, the drive will only sustain the maximum peak current for about one second, as shown in the figure below.



Note: Commanding maximum peak current output starting from above zero command will also yield reduced peak current output time.

Above Maximum Continuous Current

When commanding output current less than the maximum peak current limit, but more than the maximum continuous limit, the current output can be sustained for a longer time period than a maximum peak command before folding back.



The closer the commanded current is to the peak current limit, the shorter the peak output time.

Maximum Continuous

Any command at or below the maximum continuous current limit can be achieved for as long as there are no fault conditions present.

Velocity Modes

When the drive is configured for any of the velocity modes, the user is no longer in direct control of the current output. The current commands will be determined by the velocity loop. Though internally the current loop still functions like it is described above, it will do only what is necessary to meet the velocity demand.

The current output will be heavily dependent on:

- How tight the velocity loop is tuned
- The load characteristics
- The speed the motor is already turning
- Magnitude and slope of the velocity step