



Document Reference: AN060013VS1

Making use of new VS1 S-Curves

Required Equipment:

VS1SP Inverter
VS1GV Vector
VS1SD Servo

Introduction:

Typical Applications:

- Hoist
- Cranes
- Food Processing
- Bottling Conveyers

S-Curve is a percentage of the total Accel and Decel time and provides smooth starts and stops. The VS1 provides a new way to use this feature. We now offer a Start S-Accel 1, 2 and END S-Accel 1, 2. This will give our customers the option to program a percentage of the Start Accel and End Accel up to 100% of the Max Speed. This feature is also offered in Decel portion of the S-Curve under Start S-Decel 1, 2 and End S-Decel 1, 2. Again this will give the customer the option to program a percentage of their Decel up to 100% of their max speed. This feature is compatible in the VS1SP and VS1GV Series controls.

The following list represents parameter settings to be used. These settings assume the control has been wired and programmed properly.

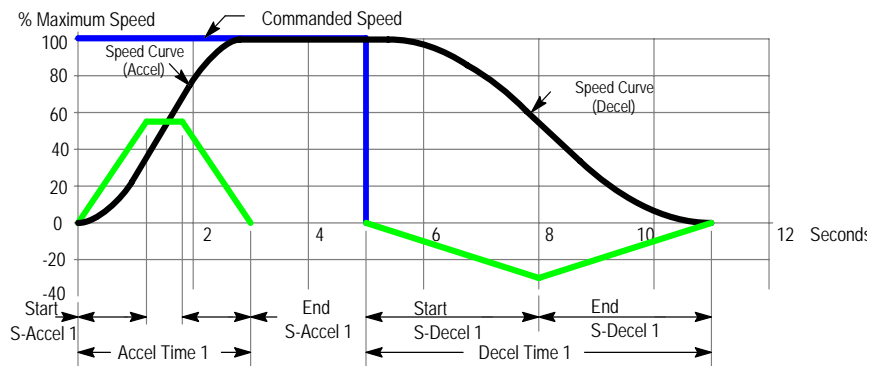
1. Block Title: Ramp Rates

Set the ACC/DEC rate parameters to values that suit the application.

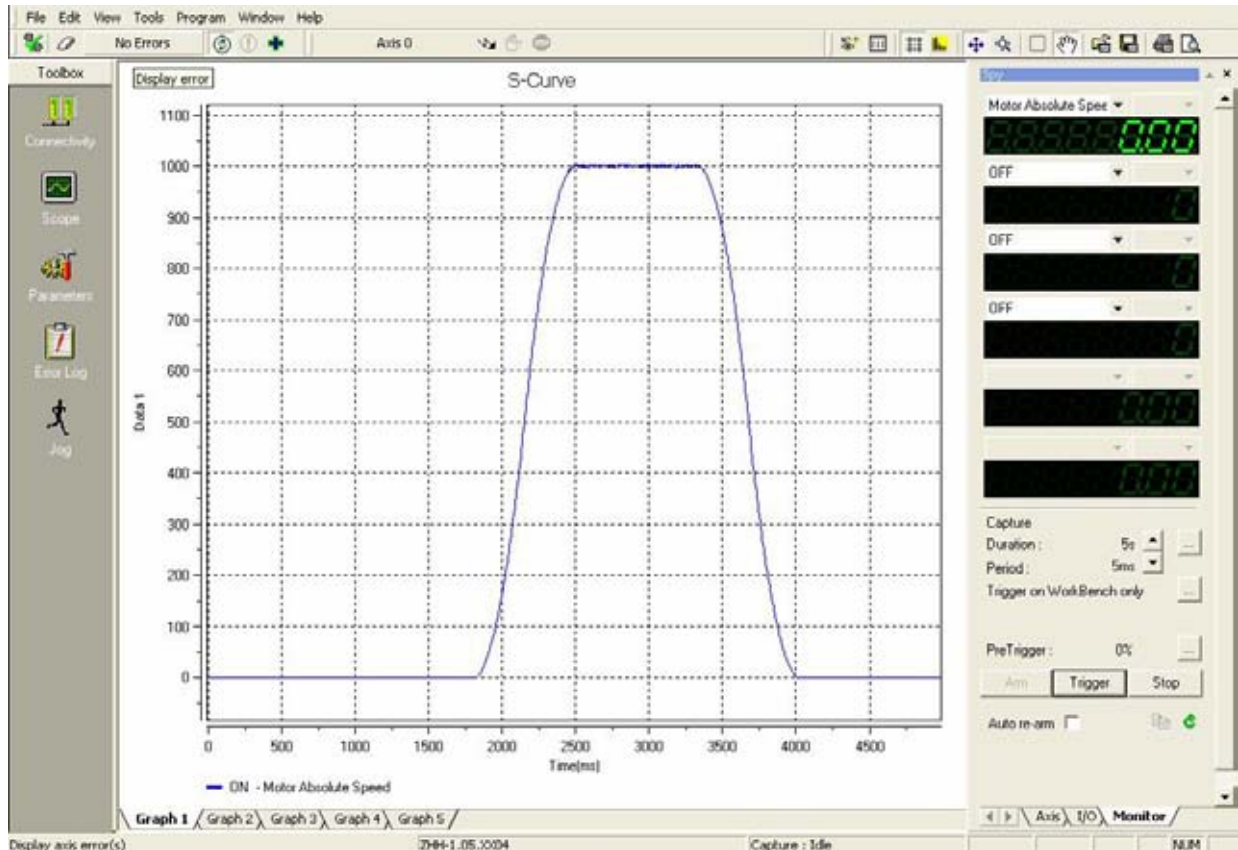
2. Block Title: Ramp Rates: Parameters

- **Accel Time 1,2**
- **Decel Time 1,2**
- **Start S-Accel 1,2**
- **End S-Accel 1,2**
- **End S-Decel 1,2**
- **End S-Decel 1,2**

Figure 1 S-Curve Example

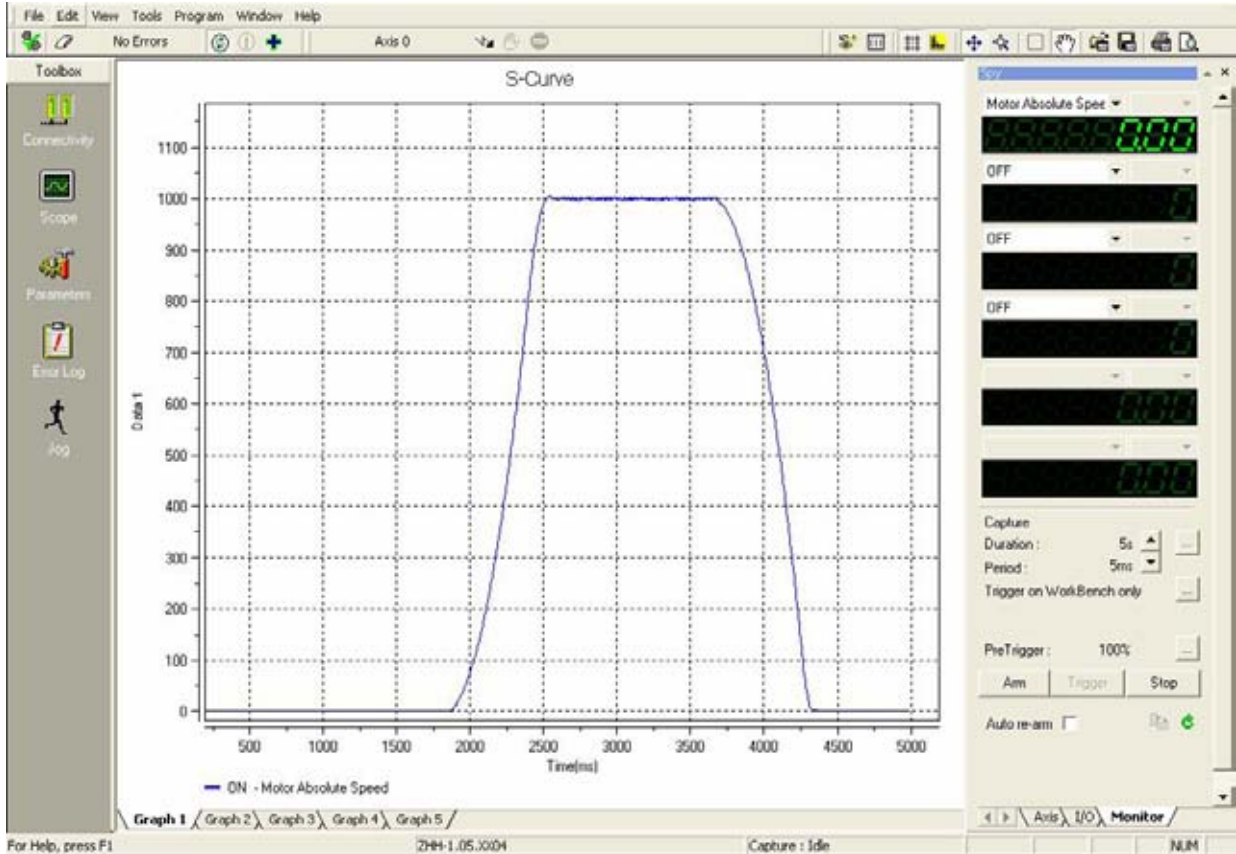


Example: If you set the Start S-Curve Accel to 75% the highest you can set the End S-Curve Accel is 25%. this works the same way in the Start S-Curve Decel and the End S-Curve Decel.



Capture provided by Baldor Mint Work Bench

Example of an S-Curve on the VS1 with a 50% Start S-Accel, 50% End S-Accel, 50% Start S-Decel and 50% End S-Decel. The Accel and Decel rates were set to 3 seconds.



Capture provided by Baldor Mint Work Bench

Example of an S-Curve on the VS1 with an 80% Start S-Accel, 20% End S-Accel, 70% Start S-Decel and 10% End S-Decel. The Accel and Decel rates were set to 1 second.

Note: If faults (motor trips) occur during rapid Accel or Decel, Selecting an S-Curve may eliminate the faults without affecting the overall ramp time. Making some adjustments of Accel, Decel and S-Curve settings may be necessary to optimize your application.