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APPLICATION NOTE

Drive Applications Support Library

Application Note	AN-P2-002
Title	Setting up Acceleration and Deceleration Ramp Rates
Related Products	P2 Series AC Drives
Level: 1	<ul style="list-style-type: none"> 1 - Fundamental - No previous experience necessary. 2 - Basic - Some basic drives knowledge recommended. 3 - Advanced - Some basic drives knowledge required. 4 - Expert - Good experience in topic of subject matter recommended.

Overview:

P2 provides parameters to independently adjust the acceleration and deceleration ramp times of the motor. The user can manually adjust these parameters according to the application requirements.



Note that ramp rates should be set with caution: The equipment being operated by the motor must be capable of performing the programmed ramp rates without damage or degradation of the mechanical / moving parts.

Parameters:

P1- 03 Acceleration ramp time

This parameter specifies the time taken for the P2 output frequency to increase from 0.0Hz to the motor base frequency programmed in P1-09. This effectively sets the rate of change of speed during acceleration.

Note that, due to ramp rates being specified as a time from 0 to base speed the smaller the value set the faster the resultant 'ramp rate'. Using too small a value in this parameter may cause an over current trip during acceleration or cause damage to the connected load of the motor.

P1- 04 Deceleration ramp time

This parameter specifies the time taken for the P2 output frequency to decrease from the motor base

frequency programmed in P1-09 to 0.0Hz. This effectively sets the rate of change of speed during normal deceleration.

If this parameter is set to zero the drive will automatically decelerate the motor at the fastest rate possible without causing an over voltage trip whenever a stop command is applied.

Note that, due to ramp rates being specified as a time from 0 to base speed the smaller the value set the faster the resultant 'ramp rate'. Using too small a value in this parameter may cause an over current trip during acceleration or cause damage to the connected load of the motor.

P2- 25 Second Deceleration ramp time

This parameter also specifies the time taken for the drive output frequency to decrease from the motor base frequency programmed in P1-09 to 0.0 speed, but is only effective (replaces the standard deceleration ramp P1-04) when purposely selected. Selection of the fast deceleration ramp can be done via the digital inputs or by selection of this behavior in response to a mains loss condition (set in parameter P2-38).

To select fast ramp to stop relating to a mains loss condition set parameter P2-38 = 2.

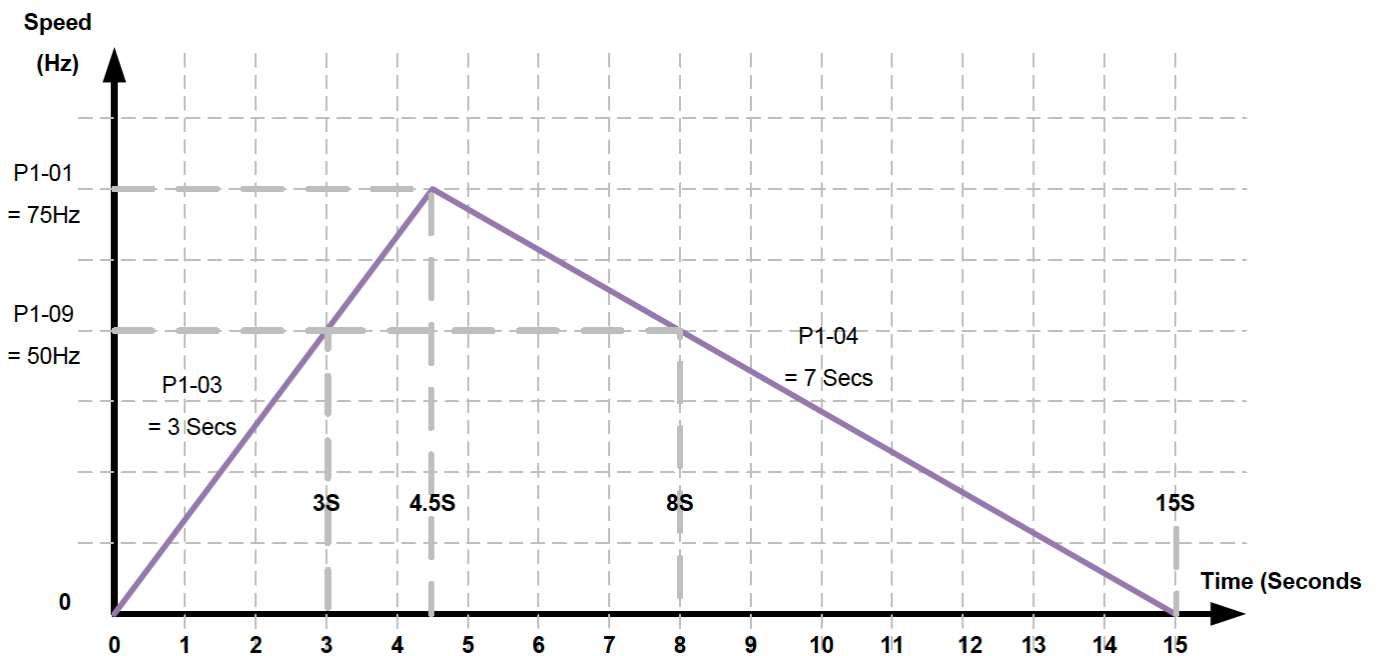
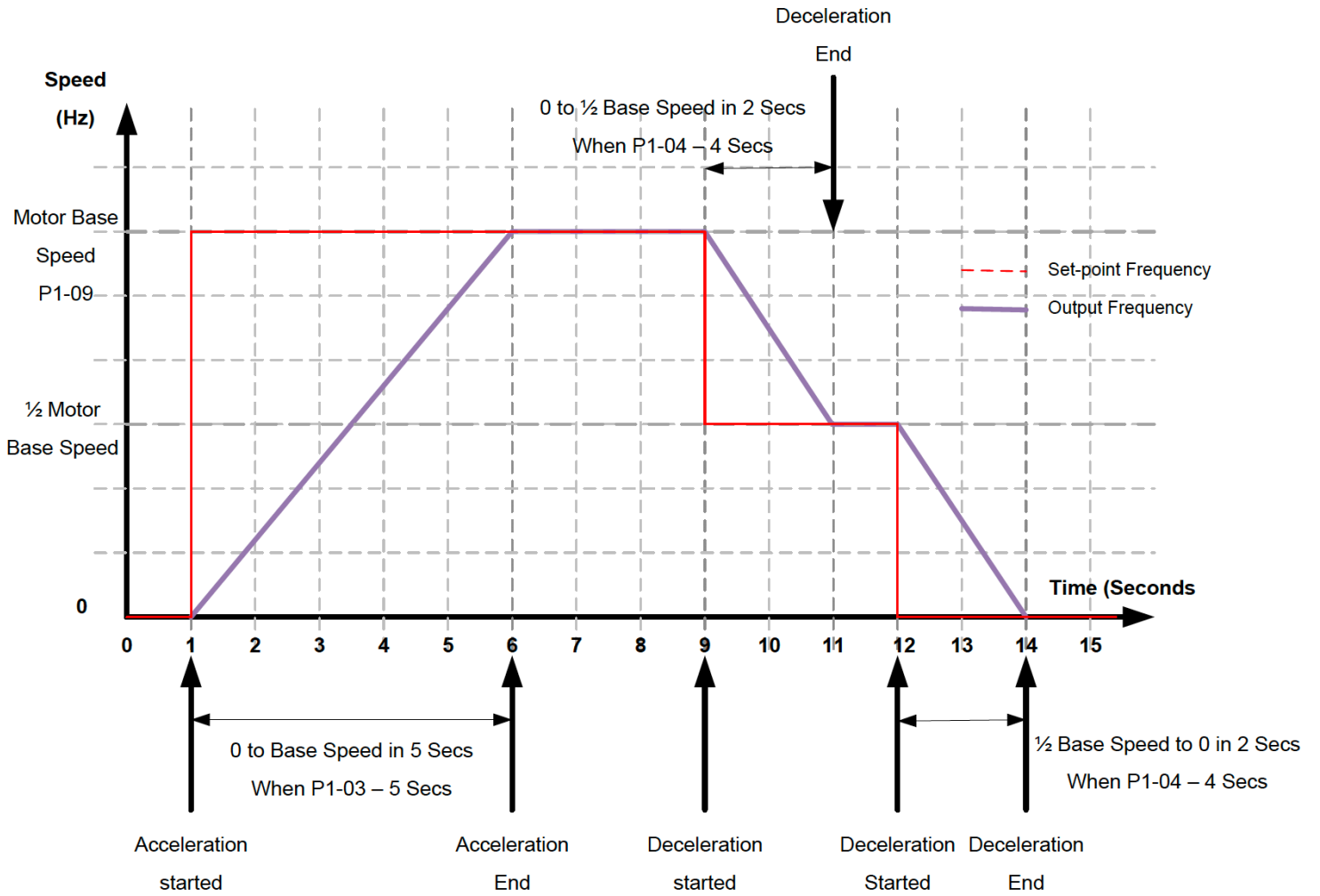
See the 'Analog and Digital Configurations' tables in the P2 Series User Guide for more information about the digital input functions.

If P2-25 is set to zero, the drive will automatically control the motor to stop as fast as possible without causing an over voltage trip when the stop command is applied and the second deceleration ramp selected. This function suits high inertia loads which require short stopping times

Additional Notes

If the drive output frequency is above the motor base frequency, the time required reaching the target speed, or to stop the drive from its current speed will be longer than the ramp times set in parameters P1-03 and P1-04.

See the diagrams below for further illustration.



Revision History			
Version	Comments	Author	Date
1	Application Note Creation / Release	JP	07/02/12
2	Revised to new format	KB	02/07/14

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