

Optidrive Applications Support Library

Application Note	AN-ODE-2-002
Title	Setting Up Acceleration and Deceleration Ramp Rates
Related Products	Optidrive E2
Level 1	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

Optidrive E2 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

P -03 Acceleration ramp time

This parameter specifies the time taken for the Optidrive E2 output frequency to increase from 0.0Hz to the motor base frequency programmed in P-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.

P -04 Deceleration ramp time

This parameter specifies the time taken for the Optidrive E2 output frequency to decrease from the motor base frequency programmed in P-09 to 0.0Hz. This effectively sets the rate of change of speed during normal deceleration.

If P-04 is set to zero, the Optidrive will use the ramp rate set in P-24 (fast ramp) to decelerate the drive.

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.

P- 24 Second Deceleration ramp time

This parameter also specifies the time taken for the Optidrive output frequency to decrease from the motor base frequency programmed in P-09 to 0.0 speed, but is only effective (replaces the standard deceleration ramp P-04) when purposely selected. Selection of the fast deceleration ramp can be done via the digital inputs or by selection of this behaviour in response to a mains loss condition (set in parameter P-05).

To select fast ramp to stop relating to a mains loss condition set parameter P-05 = 2.

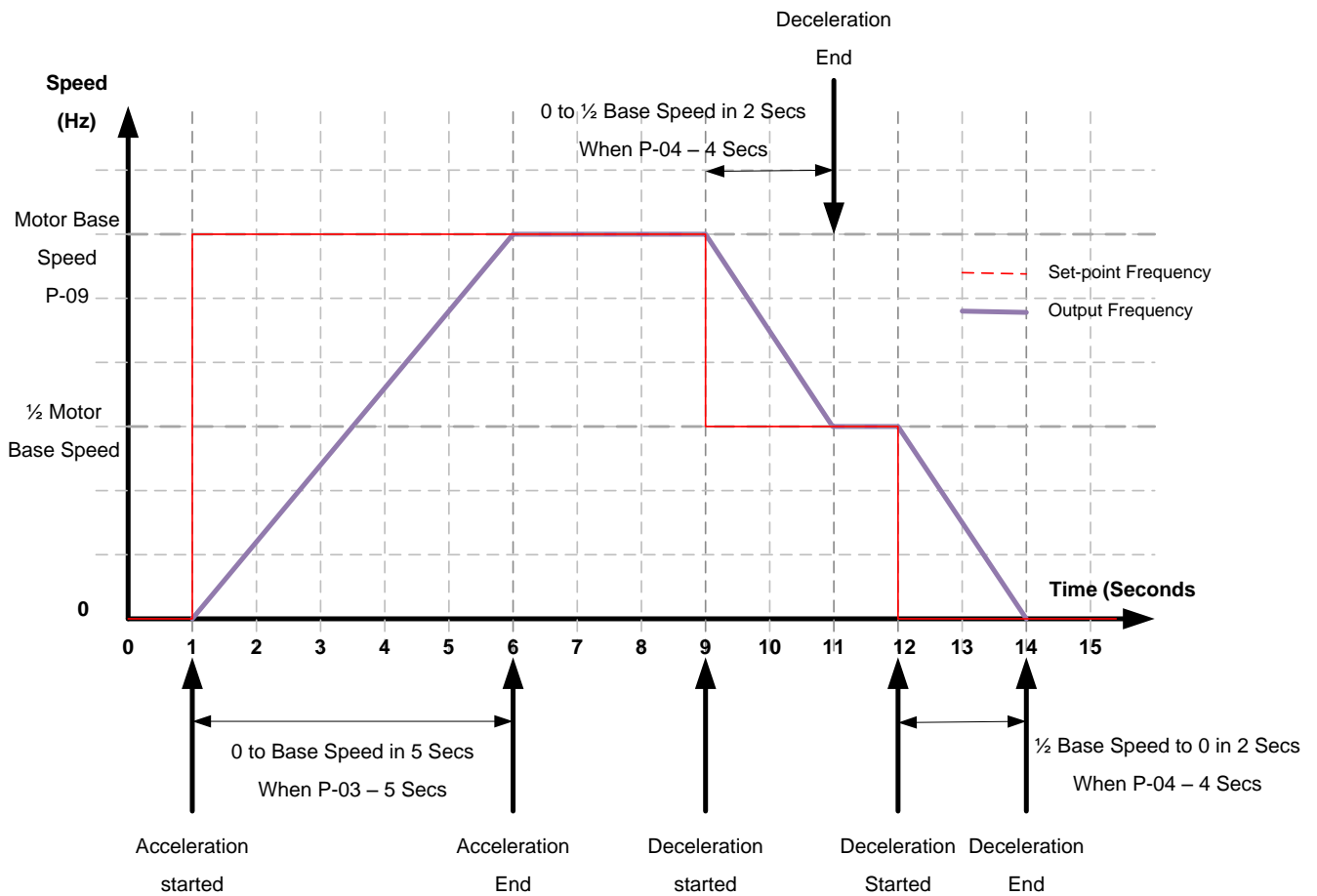
See the 'Analog and Digital Configurations' tables in the Optidrive E2 User Guide for more information about the digital input functions.

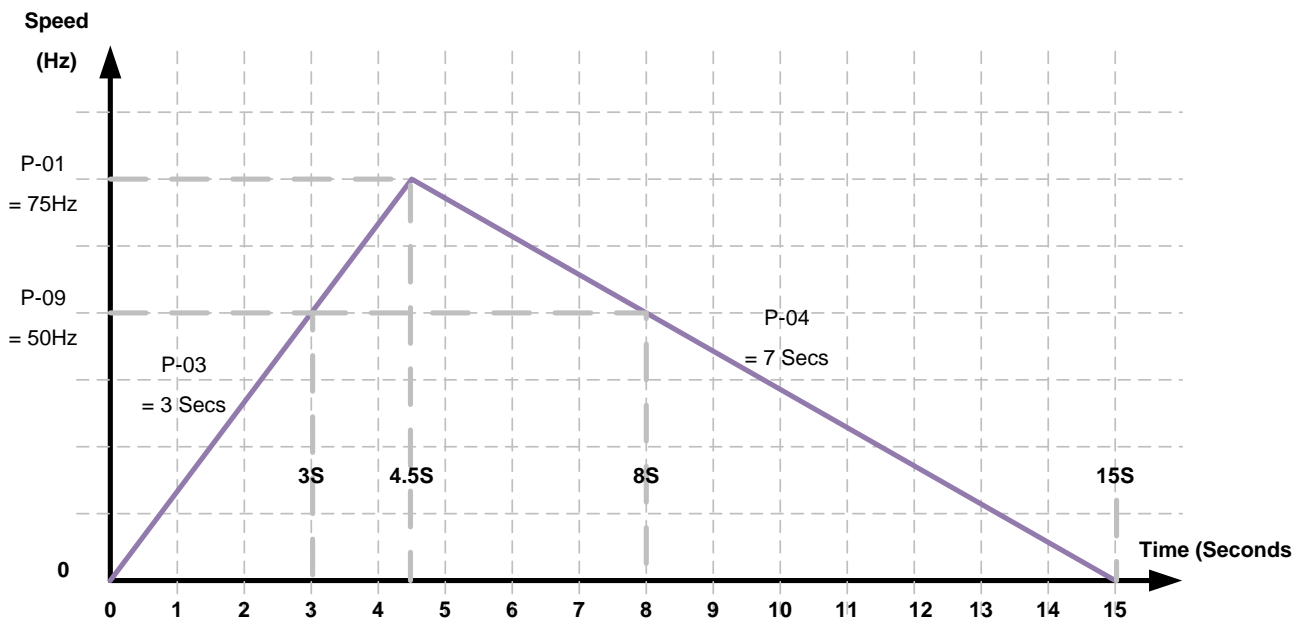
If P-24 is set to zero, the Optidrive will coast to stop when decelerating using the fast ramp.

Additional Notes

Note that if the Optidrive 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 P-03 and P-04.

See the diagrams below for further illustration.





Appendix:

Revision History			
Issue	Comments	Author	Date
01	Document Creation	JP	08/02/12
02	Revised to new format	KB	24/04/14