Optidrive Applications Support Library

Application Note	**AN-ODV-2-003**
Title	**Selecting the Required Stopping Mode**
Related Products	**Optidrive HVAC**
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

This feature determines the way in which the motor comes to standstill when the drive enable signal is removed.

For loss or removal of the drive enable input, applications may require the drive to decelerate at a constant ramp rate, or to coast to a stop.

This application note describes how the Optidrive HVAC can be configured for these different operational modes.

Optidrive HVAC Behaviour on loss of Enable Signal (Normal Stop Condition)

Normal stopping occurs when the enable signal is removed from the Optidrive. The mains power supply must always be maintained on the Optidrive for a normal stop to be performed.

When P1-05 is set to 0 (default value), the motor is ramped to a controlled stop with the stopping time determined by:-

- the output frequency at the time the stop command is received
- the motor rated frequency set in P1-09
- the ramp down time programmed in P1-04 (or P2-25)

With some setting of menu 9 (Advanced Drive Logic Control) it is possible to select a 2nd deceleration ramp time, so that (depending on the status of the digital inputs) the ramp down time will be controlled by P2-25 as opposed to P1-04. This can be utilised in applications which occasionally require a faster stopping time than the normal ramp down time. See the relevant Optidrive HVAC User Guide for details on how to select this function.

When P1-05 = 1 (coast to stop selected), the Optidrive output is immediately disabled following loss of the enable command, and the motor and connected load will decelerate depending on the inertia and friction in the system (Uncontrolled or coasting to stop). This mode can be useful on high inertia applications where the stopping time is not important.

It is important when this setting is used in applications with high inertia loads such as fans, which may continue to rotate after the drive has been disabled, and may still be rotating when the drive is re-started, that the spin start function is also enabled (P2-26 = 1).

Parameters

P1- 05 Stop mode Selection

P1-05 = 0, (default value), Controlled Ramp to Stop

Removing the drive enable signal will cause the drive to decelerate the motor to stop at a rate defined by the first deceleration ramp time (P1-04). The second deceleration ramp time (P2-25) can be used if selected via the digital inputs (see settings for parameter P1-13 and menu 9 in the User Guide).

P1-05 = 1, Coast-to-Stop

In this case, the drive output will be disabled as soon as the enable signal is removed, leaving the motor to coast to stop, braked only by the system frictional losses. This mode is often used in conjunction with a mechanical brake.

P1-04 and P2-25 Ramp settings

If P1-04 = 0, the drive will implement a quickest possible stop whilst preventing an over-voltage trip.

If P2-25 = 0, the drive will implement a coast to stop whilst stopping when 2nd ramp rate is selected.

Appendix

Revision History			
Issue	Comments	Author	Date
01	Document Creation	JP	08/02/12
02	Updated to new format	KB	25/04/14