Optidrive Applications Support Library

Application Note	AN-ODV-3-012
Title	Using Standby Mode
Related Products	Optidrive Eco
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 Eco drives features a built in "Standby Mode" function, designed to save energy by switching off the output of the inverter automatically when not required, and automatically switching on again when required again.

This document describes how to use this Standby function.

The Standby Mode function operates differently depending on whether the drive is operating in PID control mode (P1-12 = 3) or not. Both operating modes are described here.

Standby Mode Parameters

P2-27 Standby Mode Time

This parameter determines the time for which the drive will operate before entering Standby Mode when the output frequency remains below the Standby Activation Speed P3-14. The time period is set in seconds to one decimal place. Factory setting of this parameter is 20.0 Seconds. The output frequency of the drive must remain below the level set in P3-14 for the whole of this time period, otherwise the drive will not enter standby mode.

This parameter is active in all control modes, e.g. any setting of P1-12.

P3-13 PID Error Wake Up Level

This parameter is active only in PID Control Mode (P1-12 = 3), and defines the PID error required (Difference between the Feedback and Setpoint) before the drive will restart after entering Standby Mode. This parameter is set in % to one decimal place, as a % of the PID feedback transducer range. See the operation description below for further information.

P3-14 Standby Activation Speed

This parameter defines the output frequency / speed at which the Standby Mode Time is triggered. The output frequency / speed of the drive must remain at or below this level to allow the drive to enter Standby Mode.

Note that if P3-14 < P1-02, the drive will never enter Standby Mode.

When operating in PID Control, P1-12 = 3, when in Standby Mode, the drive will not restart from Standby until the output frequency demand exceeds this value.

Standby Mode Operation

Optidrive Eco Standby Mode operates as follows:-

- When operating in any Control Mode except PID Control (P1-12 = 0, 1, 2, 4, 5 or 6)
  - o Standby Mode can be enabled by setting parameter P2-27 > 0.0 seconds
  - o The drive will switch to Standby when the output frequency remains at or below the Standby Mode Activation Frequency / Speed (P3-14) for a time period equal to or greater than the time set in P2-27.
  - o The drive will restart normal operation immediately when the frequency setpoint rises above the Standby Mode Activation Speed.
- When operating in PI Control Mode (P1-12 = 3)
  - o Standby Mode can be enabled by setting parameter P2-27 > 0.0 seconds
  - o The drive will switch to Standby Mode when the output frequency remains at Standby Mode Activation Frequency / Speed (P3-14) for a time period equal to or greater than the time set in P2-27.
  - o When the drive enters Standby Mode, the Output of the PID Controller is set to zero.
  - o The PID Controller will restart when the PID error (difference between the Setpoint and Feedback) exceeds the threshold level set in parameter P3-13 PID Control Error Wake Up Level.
    - ▪ E.g.
    - ▪ If the feedback transducer range is 0 – 6 bar
    - ▪ PID Wake Up Error Level set to 5%
    - ▪ The PID controller will restart when the feedback level differs from the setpoint by 5% x 6 bar = 0.3 bar
    - ▪ If the setpoint is 3 bar, the pressure must then fall from 3 bar to 3 – 0.3 = 2.7 bar before the PID controller restarts
  - o The drive will restart the motor only when the output of the PID controller exceeds the Standby Mode Activation Frequency / Speed (P3-14)
  - o For optimum response, it is advisable to set the PID Output Low Limit P3-08 to a value slightly below the minimum speed, e.g.
    - ▪ P3-08 = (P1-02 / P1-01)% - 1
    - ▪ Hence if P1-01 = 50.0Hz, P1-02 = 20.0Hz, P3-08 = (20 / 50)% - 1.0 = 39.0%
  - o When the PID error level is exceeded, the output of the PID controller will immediately switch to this level.
  - o This will provide a faster reaction when the drive should restart.

Appendix

Revision History			
Issue	Comments	Author	Date
01	Document Creation	KB	13/05/15