



Optidrive Applications Support Library

Application Note	AN-ODP-2-005
Title	Displaying Motor Speed in RPM
Related Products	Optidrive P2
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

The Optidrive P2 allows all speed related parameters to be displayed and entered in RPM instead of Hz. By default, the Optidrive P2 displays the operational speed and all speed related parameters in Hz. By setting the value of the 'Motor Rated Speed parameter' to the motor rated speed in RPM, the Optidrive will display the motor speed and the speed related parameters in RPM.

Parameters

Motor rated speed Parameter:

Motor Rated Speed parameter is P1-10

When this parameter is set to zero, the speed of the motor and associated speed parameters will be displayed in Hz.

When the rated speed has been set, all speed-related parameters will be displayed in RPM. Also, the drive will show the running speed in RPM during normal operation.

When operating in V/F speed control mode and with the motor nominal speed set in RPM (in P1-10) the slip compensation will be activated automatically, giving improved shaft speed regulation.

When operating in sensorless vector mode, the motor shaft speed is accurately controlled to match the displayed speed in Hz or RPM. In this case, P1-10 does not change the speed control performance.

The minimum available non-zero value for the Motor rated speed parameter is the synchronous speed of a 24-pole motor (250 RPM).

Example

(For a 2-pole 50Hz motor)

If the operating speed and all speed related parameters should be displayed in Hz.

P1-10 should be set to 0 (factory default value). Displayed speed then represents the electrical frequency of the rotor in Hz. The actual speed of the motor will depend on the number of poles of the motor and the load applied.

If the operating speed and all speed related parameters should be displayed in RPM:

P1-10 should be set to the motor rated speed (as found on the motor nameplate). The displayed speed will then represent the shaft speed of the motor in RPM with some automatic compensation of load.

Motor Data Plate Example for Motor Rated Speed:

Motor rated speed is typically displayed on the motor nameplate or is available from the motor manufacturer.

3~Mot. 09413371-1001-B			Serial: 09-07-16299-001			
kW	Hz	V	A	rpm	Cosφ	
0.37	50	220 – 240 Δ	1.85	1320	0.75	
0.37	50	380 – 415 Y	1.07	1320	0.75	
IEC 34-1 / IEC 60034-1.		I.Class: F	IP: 55	Duty: S1		
Core Motor Company Tech Industrial Estate United Kingdom BT24 4MX			Weight: 6.15kg		CE	

Rated Speed: Enter into P1-10

Enter value to allow parameters to be displayed and entered in Rpm.

Leave at 0 for display / programming in hertz

Speed related parameters shown / Entered in RPM (When Value entered in P1-10)

Parameter Numbers	Description
P1-01, P1-02	Maximum Speed, Minimum Speed
P2-01 thru P2-08	Preset Speed 1 thru 8
P2-09, P2-10	Skip Frequency, Skip frequency Band
P8-02, P8-04, P8-06, P8-08, P8-10, P8-12	Speed Boundary Values

Appendix:

Revision History			
Issue	Comments	Author	Date
01	Document Creation	JP	09/02/12
02	Updated to new format	KB	15/06/15