



# Optidrive Applications Support Library

<b>Application Note</b>	<b>AN-ODV-3-005</b>
<b>Title</b>	<b>Choosing Hz or RPM</b>
<b>Related Products</b>	<b>Optidrive Eco</b>
<b>Level</b> <b>1</b>	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 Eco allows the user to select whether values relating to motor speed are displayed and entered in Hz or RPM. By default, these values are set and displayed in Hz, however, by entering the motor nameplate RPM value into parameter P1-10 Motor Rated Speed parameter, all values may be displayed in RPM.

## Parameters

### P1-10 Motor rated speed Parameter

By default, this parameter is set to zero. During operation, the speed of the motor is displayed in Hz and associated speed related parameters are also displayed in Hz.

The user may optionally enter the rated speed from the motor nameplate. When entered, all speed-related parameters will be displayed in RPM, and the drive will also show the running speed in RPM during normal operation.

In addition, with the motor nominal speed set in RPM (in P1-10) the slip compensation function is activated automatically, where the motor speed is automatically compensated for changes in load.

The minimum available non-zero value for the Motor rated speed parameter is the synchronous speed of a 20-pole motor (300 RPM).

Note that the values are automatically compensated to the ideal synchronised speed of the motor, e.g.

If

- P1-01 & P1-09 = 50Hz
- P1-10 = 1470 RPM

In this case, the drive automatically determines from the entered information, and therefore the ideal synchronous speed would be 1500 RPM. P1-01 will therefore display 1500 RPM, not 1470.

## 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
P3-14	PID Standby Activation Speed
P8-10	Fire Mode Speed
P8-17, P8-18	Assist Pump Boundary Speeds

## Appendix

Revision History			
Issue	Comments	Author	Date
01	Document Creation	KB	31/03/15