

Application Note

AN-ODP-01

## ***Setting up the Motor Nameplate Data***

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- ***General:***

Optidrive Plus is based on 3<sup>rd</sup> generation vector control technology (3GV) which provides the best possible control performance of a standard AC induction motor without encoder feedback. In order to achieve this performance, several key parameters must be set up in the drive to identify the motor type.

These key parameters need to be set to the Motor Nameplate Data - taken from the rating plate of the motor and entered into the Optidrive plus to ensure that the drive is matched to the motor. This ensures best performance and avoids the risk of damage to the motor.

- ***Rating plate parameters***

### **P1-07 Motor rated voltage**

The motor rated voltage in Volts should be entered into this parameter.

Most industrial motors have a Star / Delta connection to allow operation at different voltages.

Ensure that the voltage value in this parameter corresponds to the motor terminal winding connection. An incorrect value in this parameter would reduce the motor performance or risk damaging the motor.

### **P1-08 Motor rated current**

The motor rated current in Amps should be entered into this parameter.

Care should be taken to ensure that the current rating taken from the ratings plate corresponds to the motor voltage rating, ie the Star / Delta connection configuration.

Typically, this will be displayed as: 220V / 400V   3.3A / 1.9A

When this parameter has been set, the Optidrive plus will monitor the current and be able to determine whether or not the motor is in overload. Should the motor run in an overload condition for long periods of time (minutes), the Optidrive plus will trip. This provides one level of protection to prevent the motor from overheating.

The factory default value for this parameter is the rated current of the drive.

### **P1-09 Motor rated frequency**

The motor rated frequency in Hertz should be entered into this parameter. In general, this value will be 50Hz (60Hz if drive is horse power rated), so no change is required to the factory default setting.

This parameter must be changed according to the actual rated frequency of the motor that connected with the drive, especially for use with high-speed motors or special motors.

### **P1-10 Motor rated speed in rpm**

This parameter only needs to be set if the user requires the speed to be displayed in RPM.

When the rated speed has been set, all speed-related parameters (eg maximum speed, minimum speed etc) will be displayed in RPM rather than Hz.

The drive will also display the running speed in RPM in addition to the Current in Amps during normal operation.

In V/F mode (P4-01 = 2), setting P1-10 also activates the speed (slip) compensation. This gives some degree of compensation for load changes and will give an improved load regulation in comparison to when P1-10 = 0 (display in Hz, compensation disabled). Note that this type of regulation is inferior to vector speed control.

### **P4-05 Motor power factor ( $\cos\Phi$ )**

The motor power factor information should be entered into this parameter if the drive is being operated in vector control mode (P4-01 = 0 or 1).

This value is used together with the other nameplate data to calculate the motor parameters during auto-tune in vector control mode (P4-01=0 or 1) and should be entered from the motor nameplate before carrying out the auto-tune function.

Note that the correct access code must be entered into parameter P1-14 in order to access parameter P4-05. The default value for the access code in P1-14 is 101.

If the  $\cos\Phi$  value cannot be found on the motor nameplate, please refer to Application Note AN-ODP-42 for the typical  $\cos\Phi$  values.

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