

Application Note

AN-ODP-15

Changing the V/F characteristic in V/F control mode

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- **General:**

Optidrive Plus provides enhanced V/F control for general purpose AC motor control applications. This enhanced V/F control technology optimises the magnetisation of the motor. This removes the need for a voltage boost setting. For typical constant torque applications, no adjustment is necessary.

However, for some high speed motors – particularly spindle motors, the Volts / Hertz characteristic is non-linear, requiring adjustment of the V/F characteristic. This document describes how to set up the parameters to adjust the V/F characteristic of the drive.

- **Parameters:**

Note that this particular function will only work when the drive operates in voltage control mode (P4-01=2).

The V/F characteristic adjustment parameters are located in parameter group 4. In order to access these control parameters, the user should set the correct access code in P1-14. The default code is 101.

P4-09 V/F characteristic adjustment frequency

This parameter specifies the frequency at which the voltage characteristic should be adjusted. The range for this parameter is from zero to motor base frequency, as defined in parameter P1-09. See graph below for details.

The default value for this parameter is 0.

P4-10 V/F character adjustment voltage

This parameter specifies the voltage that is to be applied to the motor terminals at the frequency (speed) specified in P4-09. The range for this parameter is from 0 to P1-07 (motor rated voltage).

If P4-09 = 0, then this parameter will have no effect.

If P1-07 is changed, the value in P4-09 will be changed automatically to a value that assumes a linear V/F characteristic.

If P1-09 is changed, then both P4-09 and P4-10 will be reset to zero.

The default value for this parameter is 0.

• **Example:**

Take a typical 230V, 50Hz AC induction motor for example.

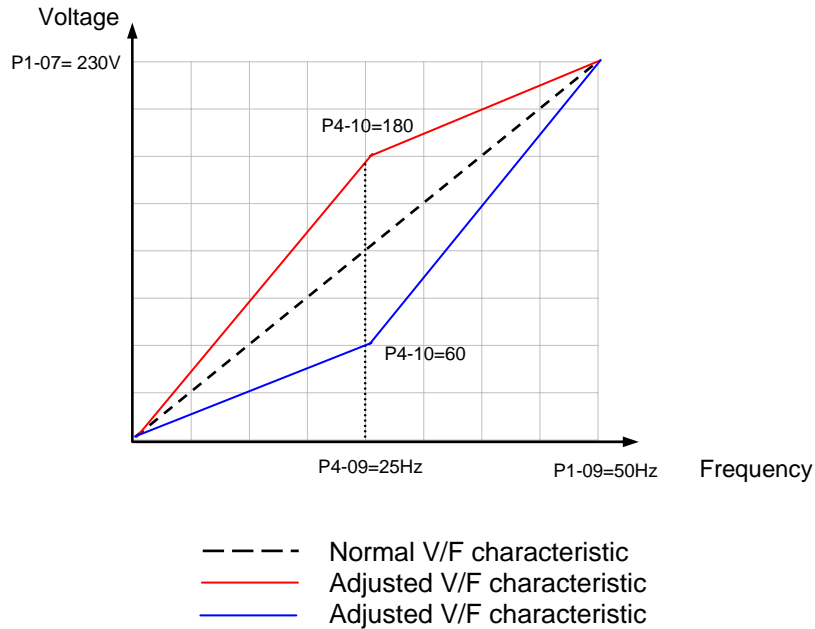
Suppose P1-07 = 230V and P1-09 = 50Hz.

Set P1-14 (access code) to 101 to permit access to parameter group 4.

Set the V/F characteristic adjustment frequency speed (P4-09) to 25Hz.

Setting P4-10= 60V gives the V/F characteristic which is indicated by the blue line in the graph below.

Setting P4-10= 180V gives the V/F characteristic which is indicated by the red line in the graph below.



Voltage / Frequency curve adjustment using P4-09 & P4-10

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