

Application Note

AN-ODP- 31

Setting up the speed controller for vector speed control

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- ***General:***

This document describes how to set up the control parameters of vector speed controller in order to get the best motor speed control performance.

The factory default values for those parameters are optimized for the normal ACI motor corresponding to the drive power rating. Usually these settings are good enough for the common application. However user can also adjust them manually to improve their motor control performance.

- ***Parameters:***

P4-03 Speed controller proportional gain

This parameter shows the drive internal speed controller proportion gain.

Increasing this parameter will enable the drive to have a quick response to motor shaft speed changes. If the user wants the motor to conquer a sudden speed changes on the motor shaft as soon as possible, this parameter probably needs to be increased. Increase this parameter to a certain value will also improve the motor spin stability especially in low speed area.

A larger value than necessary in this parameter will cause the motor rotor to freeze or spin at a certain speed, or sometimes it may also cause the motor output speed to become unstable, such as system vibration. So extra care should be taken when adjusting this parameter.

P4-04 Speed controller integral gain

This parameter represents the drives internal speed controller integral time constant.

Increasing this parameter value will effectively reduce the speed control response speed. Reducing this parameter value will effectively make the speed controller react more quickly to the speed changes.

The motor speed will become unstable if this parameter value is too small.

P5-06 Speed controller differential gain

Note: for version 2.10 or earlier, this parameter is located at P4-05.

This parameter represents the drive internal speed controller differential time constant.

This parameter has a similar function as parameter P4-04, but it is not often used in the speed controller adjustment. Increasing this parameter will increase the stability of the motor control performance and reduce the controller's response speed, and vice versa.

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