Technical instruction
ACS250 micro drives, 500-600 V
Setting up acceleration and deceleration ramp times

Overview

ACS250 provides parameters to independently adjust the acceleration and deceleration ramp times of the motor. The user can manually adjust these parameters according to the application requirements.

Note that ramp rates should be set with caution: The equipment being operated by the motor must be capable of performing the programmed ramp rates without damage or degradation of the mechanical/moving parts.

Parameters

2202 Acceleration ramp time

This parameter specifies the time taken for the ACS250 output frequency to increase from 0.0 Hz to the motor base frequency programmed in 9907. This effectively sets the rate of change of speed during acceleration.

Note that, due to ramp rates being specified as a time from 0 to base speed the smaller the value set the faster the resultant ‘ramp rate’. Using too small a value in this parameter may cause an overcurrent trip during acceleration or cause damage to the connected load of the motor.

2203 Deceleration ramp time

This parameter specifies the time taken for the ACS250 output frequency to decrease from the motor base frequency programmed in 9907 to 0.0 Hz. This effectively sets the rate of change of speed during normal deceleration.

If this parameter is set to zero the ACS250 will automatically decelerate the motor at the fastest rate possible without causing an overvoltage trip whenever a stop command is applied.

Note that, due to ramp rates being specified as a time from base speed to 0 the smaller the value set the faster the resultant ‘ramp rate’. Using too small a value in this parameter may cause an overcurrent trip during deceleration or cause damage to the connected load of the motor.

2206 Second deceleration ramp time

This parameter also specifies the time taken for the ACS250 output frequency to decrease from the motor base frequency programmed in 9907 to 0.0 speed, but is only effective (replaces the standard deceleration ramp 2203) when purposely selected. Selection of the fast deceleration ramp can be done via the digital inputs or by selection of this behavior in response to a mains loss condition (set in parameter 2006).

To select fast ramp to stop relating to a mains loss condition set parameter 2006=2.

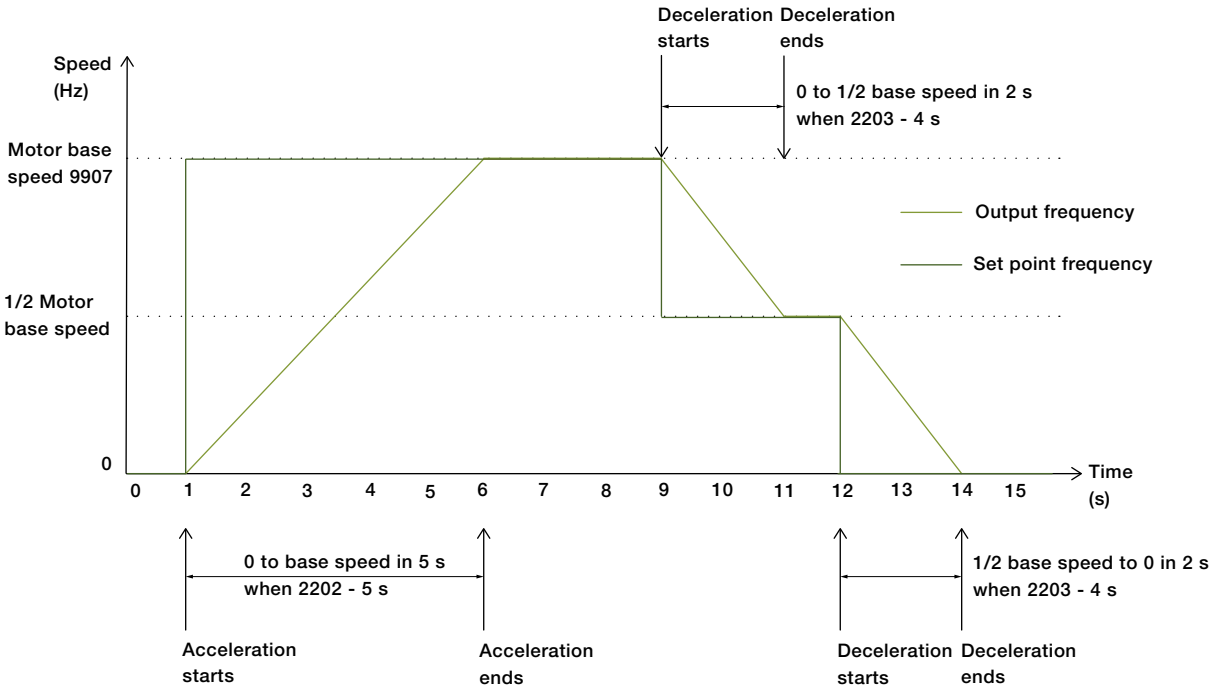
See the 'Application macros' tables in the ACS250 user's manual for more information about the digital input functions.

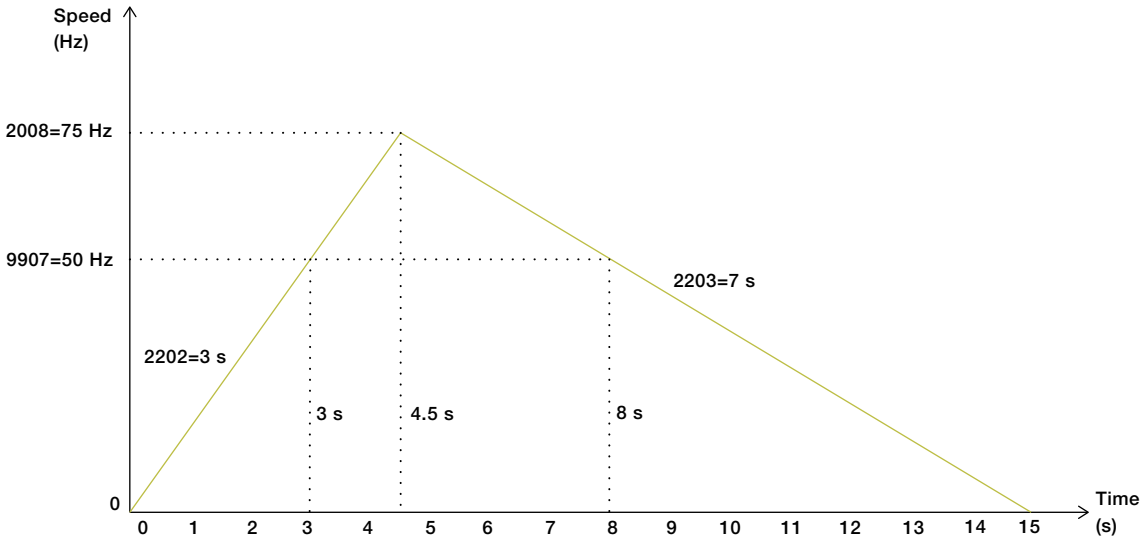
If 2206 is set to zero, the ACS250 will automatically control the motor to stop as fast as possible without causing an overvoltage trip when the stop command is applied and the second deceleration ramp selected. This function suits high inertia loads which require short stopping times.

Additional notes

If the ACS250 output frequency is above the motor base frequency, the time required reaching the target speed, or to stop the drive from its current speed will be longer than the ramp times set in parameters 2202 and 2203.

See the diagrams below for further illustration.





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