

Technical instruction

ACS250 micro drives, 500-600 V

Setting the required stopping mode



Overview

This feature determines the way in which the motor comes to standstill when the drive enable signal is removed.

For loss or removal of the drive enable input, applications may require the drive to decelerate at a constant ramp rate, to coast to a stop, or to perform an emergency stop of the motor (stop as quickly as possible).

This technical instruction describes how the ACS250 can be configured for these different operational modes.

ACS250 Behavior on loss of enable signal (normal stop condition)

Normal stopping occurs when the enable signal is removed from the ACS250. The mains power supply must always be maintained on the ACS250 for a normal stop to be performed.

When 2102 is set to 0 (default value), the motor is ramped to a controlled stop with the stopping time determined by:

- the output frequency at the time the stop command is received.
- the motor rated frequency set in 9907.
- the ramp down time programmed in 2203 (or 2206).

With some settings of 9902 (digital input configuration) it is possible to select the 2nd deceleration ramp time, so that (depending on the status of the digital inputs) the ramp down time will be controlled by 2206 as opposed to 2203. This can be utilized in applications which occasionally require a faster stopping time than the normal ramp down time. See the relevant ACS250 user's manual for details on how to select this function.

When 2102=1 (coast to stop selected), the ACS250 output is immediately disabled following loss of the enable command, and the motor and connected load will decelerate depending on the inertia and friction in the system (uncontrolled or coasting to stop). This mode can be useful on high inertia applications where the stopping time is not important, or very high friction loads such as extruders whereby the motor will stop quickly, without assistance from the drive.

It is important when this setting is used in applications with high inertia loads such as fans, which may continue to rotate after the drive has been disabled, and may still be rotating when the drive is restarted, the spin start function is also enabled (2101=1).

Parameters

2102 stop mode selection

2102=0, (default value), controlled ramp to stop

Removing the drive enable signal will cause the drive to decelerate the motor to stop at a rate defined by the first deceleration ramp time (2203). The second deceleration ramp time (2206) can be used if selected via the digital inputs (see settings for parameter 9902 in the user's manual).

2102=1, coast-to-stop

In this case, the drive output will be disabled as soon as the enable signal is removed, leaving the motor to coast to stop, braked only by the system frictional losses. This mode is often used in conjunction with a mechanical brake.

2102=2, controlled ramp to stop with dynamic braking

Whenever the drive enable signal is removed while the drive is in this mode, the motor will be ramped down to zero at a rate determined by the selected deceleration ramp rate (normally 2203 unless the second deceleration ramp rate is selected via digital inputs).

This setting behaves as per setting 0, except that the drive internal brake transistor (if fitted) will be activated in this mode, so that excess energy will be dumped into a connected brake resistor.

2102=3, coast-to-stop, dynamic braking active on speed change only

In this case, the drive output will be disabled as soon as the enable signal is removed, leaving the motor to coast to stop, braked only by the system frictional losses. The drive internal brake transistor (if fitted) will not be activate when the drive is stopping, but will be used as required during speed changes, e.g. decelerating from a high speed to a low speed, while the drive enable signal remains present.

2203 and 2206 ramp settings

If 2203=0, the drive will implement a quickest possible stop while preventing an overvoltage trip when using that ramp rate.

If 2206=0, the drive will implement a coast to stop while stopping when 2nd ramp rate is selected.



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