

Technical instruction

ACS250 micro drives, 110-480 V

Using the skip frequency function



Overview

The skip frequency parameters are used to set up a frequency band through which the drive output frequency may pass, but never continuously operate in.

This is used typically to prevent continuous operation close to any frequency at which a mechanical resonance may occur. Such resonance may simply cause excessive acoustic noise or may in some cases cause mechanical stresses that could lead to mechanical failure.

Parameters

The skip frequency centre point parameter (2501) specifies the centre point of the skip frequency band and the skip frequency band width (2500) specifies the width of the skip band.

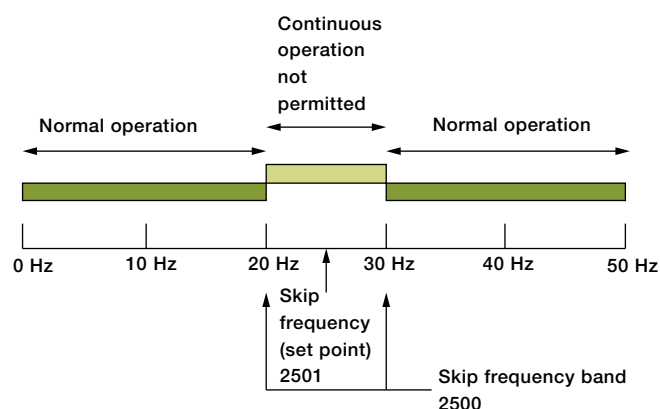
Parameter name	Parameter number	Units
Skip frequency centre point	2501	Hz/rpm
Skip frequency band width	2500	Hz/rpm

Example

- Skip frequency = 25 Hz (2501)
- Skip frequency band = 10 Hz (2500)

This will give a skip frequency band between 20 Hz and 30 Hz, centred on 25 Hz.

If the speed is negative, the skip frequency bands are mirrored. With the same settings as shown above, a skip frequency band between -20 Hz and -30 Hz, centred on -25 Hz will also be in place.

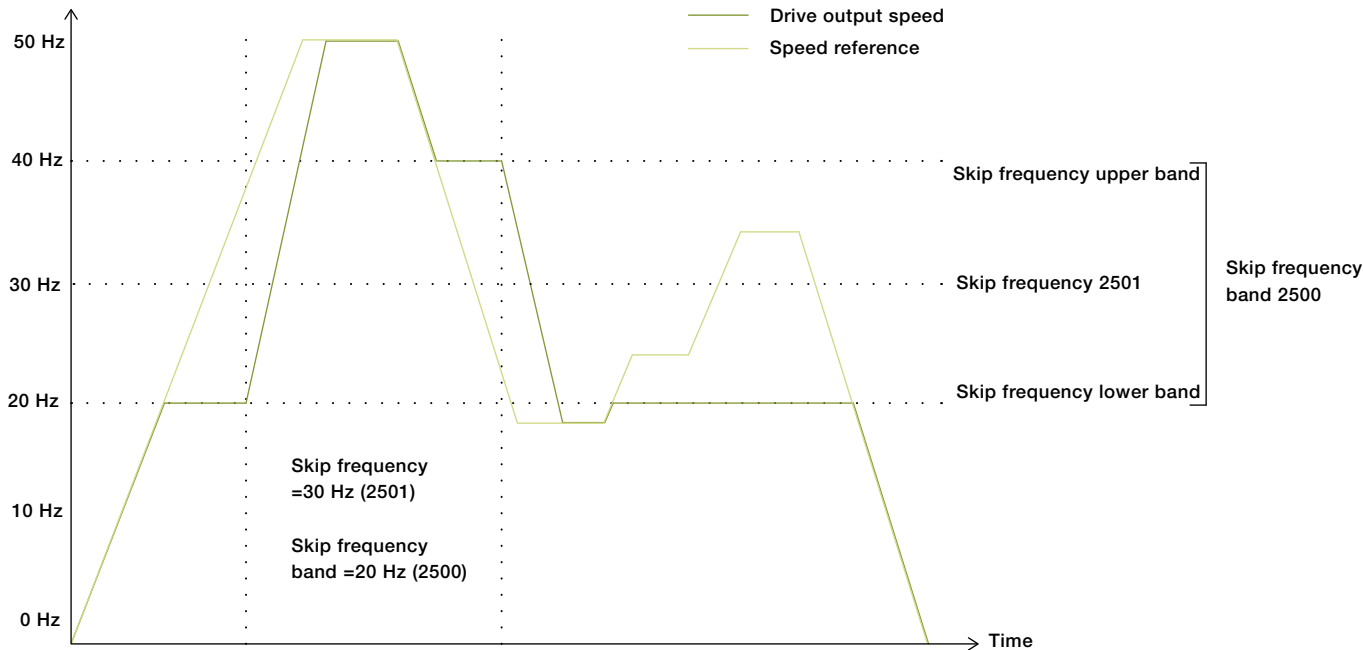


Skip frequency behavior

If the speed reference to the ACS250 requests a speed within the skip frequency bandwidth, the speed will change only until the upper or lower frequency band is encountered. The drive output will then remain at this speed until the speed reference becomes higher or lower than the opposing frequency band. The drive will then accelerate the output through the skip band to the target speed (outside of the skip band).

The diagram below shows a changing speed reference (profile) and the response of the ACS250 (output) due to its skip frequency settings.

As the speed reference to the ACS250 enters the skip frequency band (either increasing or decreasing speed) the drive output change is frozen at the edge of the skip frequency band until the point that the speed reference crosses the opposing limit. At this point the ACS250 will ramp through the skip frequency band to the opposite limit at the ramp rate specified with the drive ramps.



Set up

When the ACS250 is configured for parameter entry and display in rpm (9908 set to motor rated rpm) then skip frequency and skip frequency bandwidth will also be required to be entered in rpm.

When the output frequency ramps between the two skip frequency limits, it will do so at the ramp rates set in 2202 and 2203.

Note that the skip frequency band will be mirrored for negative speeds and will have exactly the same effect as in the positive direction.

	2501 (Set point)	2500 (Bandwidth)
Maximum setting	2008	2008
Minimum setting	2007	0
Default	0	0
Lower skip frequency band limit	$=2501-(2500/2)$	
Upper skip frequency band limit	$=2501+(2500/2)$	



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