

Application Note

AN-ODP-07

Using skip frequency

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- **General:**

The skip frequency parameters are used to set up a band of frequencies through which the drive output frequency may pass, but never stop 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.

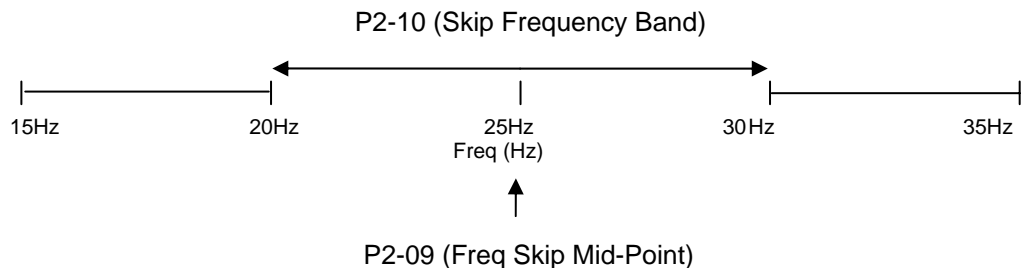
- **Parameters**

P2-09, P2-10 Skip frequency / Skip frequency band

Parameter P2-09 specifies the centre point of the skip frequency band and P2-10 the width of that band.

Consider the following example:

P2-09 = 25Hz, P2-10 = 10Hz



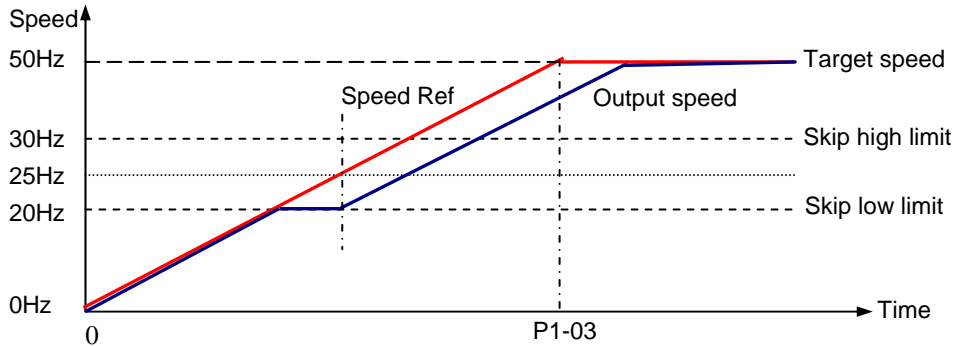
This will give a skip frequency band between 20Hz and 30Hz, centred on 25Hz.

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

The frequency skip function can operate in two different modes: Central mode and Hysteresis mode. Hysteresis mode will be automatically enabled if the User Feedback control (PID control) mode is enabled (selected by setting P1-12 to 3).

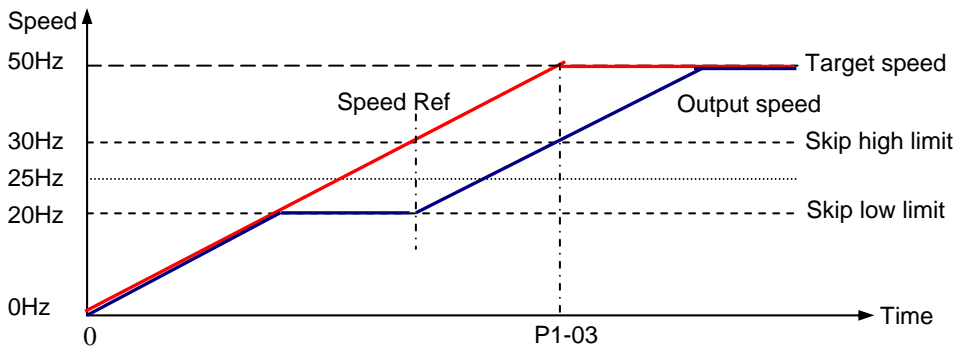
Central Mode:

If the drive speed reference requests a speed within these limits, the speed will remain at the nearest limit relative to the centre point. See the diagram below for more information.



Hysteresis Mode:

If the analog speed reference then requests a speed within these limits, the speed will change only when speed reference large than the high limit or less than low limit.



When the output frequency ramps between the two skip frequency limits, it will do so at the ramp rates specified in P1-03 and P1-04.

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

P2-09:		P2-10:	
Maximum value:	P1-01	Maximum value:	P1-01
Minimum value:	P1-02	Minimum value:	0
Default value:	0	Default value:	0

The width of the skip freq band is defined by:

$$\text{Lower limit} = P2-09 - P2-10/2$$

$$\text{Upper limit} = P2-09 + P2-10/2$$

--- End ---