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Product	Imoticon ID700
Title	Imoticon ID700 Open loop vector set up
Summary	This document gives information on setting up the Imoticon ID700 in open loop vector mode

NOTE: Please read this document in conjunction with the Imoticon ID700 Easy Start Guide and Imoticon ID700 Advanced User Manual.

Overview

As default the Imoticon ID700 is set up in V/f fixed boost mode. This means that the drive outputs a linear voltage to frequency curve from 0V/ 0Hz to 50Hz/230V or 400V. At low frequency, a boost voltage can be added to this curve to aid starting heavy starting torque loads.

The setting of this boost voltage isn't an exact science; too little boost can mean that the motor doesn't start as the motor torque doesn't overcome the required load starting torque and the drive can go into current limit. Too much boost can mean that the motor doesn't start because it is over-fluxed (over-magnetised) and the drive will go into current limit.

Although with most heavy starting torque applications, some minor adjustment of the boost parameter (P00.12) can allow the motor torque to overcome the load starting torque, another method is to change the control method from V/f to open loop vector control.

In open loop vector control, the drive carries out an autotune on the motor to measure the motors characteristics. From these measurements, the drive calculates the voltage to apply to the motor to give good starting torque performance.

Open loop vector mode set up

Set the following parameters:

P00.01 = Motor rated voltage – Set to motor nameplate voltage

P00.02 = Motor rated current – Set to motor nameplate current

P00.23 = 1 – Advanced parameter access

P13.01 = 1 – Open loop vector mode

P13.05 = Set to motor nameplate power factor

Autotune

NOTE:

The autotune is a non-rotating autotune – the motor doesn't rotate and doesn't need disconnecting from the load.

Set **P13.02** = 1

Press the PROG key

Press the ESC key twice so display shows 0.00

Provide the drive with a RUN command

The drive will enable and left hand side of the display will show 'U' while the autotune is being carried out.

Once an autotune has been completed, the drive will return the 'STOP' condition and P13.02 will return to 0.

Toggle the run command and now the drive will run in open loop vector mode.

NOTE:

The autotune should be carried out on a cold motor.

The motor should be at standstill when an autotune is carried out.

If any changes are made to the drives motor map parameters, motor wiring or configuration, motor size or motor type, the drive must be re-autotuned to the motor.

Motor magnetising time

A further enhancement to using open loop vector is to use a motor magnetising period to magnetise the motor before it starts to accelerate.

This can be achieved by changing the value of parameter **P03.07** – Hold time for start frequency.

Increase **P03.07** as per the table below:

Motor kW	P03.07 (in seconds)
Up to 5.5kW	0.1
7.5kW to 18.5kW	0.2
22kW & 30kW	0.3
37kW	0.4
45kW	0.5
55kW	0.6
75kW	0.7
90kW	0.8
110kW	1.0
132kW	1.3
160kW	1.5

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