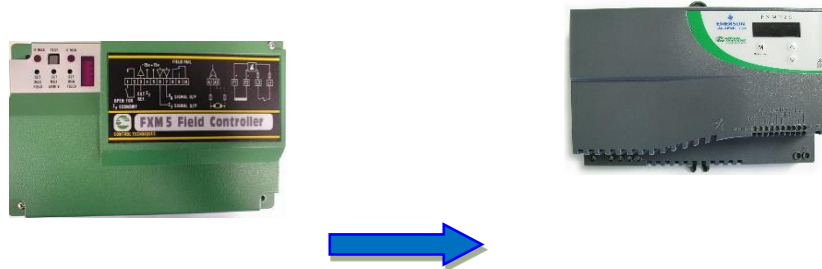# Converting form the FXM4 / FXM5 to the FXMP25

Background:

This document attempts to outline the procedure on how to convert form an existing FXM4 and FXM5 to the FXMP25 in a **Stand alone mode**. The FXM5 unit had the capability to operate in 3 different modes. Each mode has a slightly different setting so one first must determine what mode;

1) **Stand Alone Mode –** Setting the field current using the Calibration pots (common with the FXM4).
2) **Analog Current Control –** Using an external device (i.e. dancer arm, external reference pot)
3) **Digital Control –** Used in conjunction with the Mentor II/ Quantum III unit connected by a 10 pin ribbon cable. (FXM5 only!)
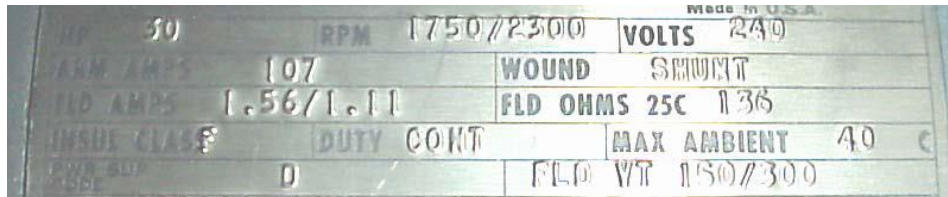
Motor Information:

1. Extract the motor's nameplate information. Some nameplates will have multiple currents like shown below; this is used to obtain the higher speed rating with a weaken field, this is commonly know as the Constant Horsepower Range.

    a. Field Voltage _____Voltage or _____ / _____Voltage

    b. Field Current _____Adc or _____ / _____ Adc

    c. Measured Resistance of the field (cold) _____ Ω

    d. Calculated Field current _____Amps

Control Techniques a division of Nidec Motor Corporation
7777Golden Triangle Dr. – Suite 250 - Eden Prairie, MN 55344-3505 USA
T: +1 952 995-8000 www.controltechniques.us

e. Is the armature of the motor connected to the field regulation? **Y**es / **N**o

Stand Alone Mode

Low Voltage Terminal Connections:
In stand alone mode the field regulator was preconfigured for set field current outputs. The terminals (1-10) of the FXMP25 are the same as both the FXM5 & FXM4.
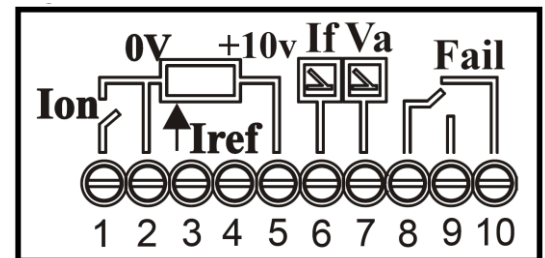
High Voltage Terminal Connections:
The terminals are still the same as well, but it must me known if using the A1 & A2. This connection normally indicates that the field controller will be used in a field weakening application.

Parameter Setup:
When setting the FXMP25 to match how the previous field regulators were set some parameters will need to be set to achieve this are as follows:

1. Par **#78**, Field Mode, needs to be set up in either:
   - **ST.H** – Stand alone, half control (all FXM4 & if on the FXM5 the LK3 is in HALF)
   - **ST.F** – Stand alone, full control (if on the FXM5 the LK3 is in FULL)

2. After selecting either 4 or 5 in the previous step, either the mode button must be held for at least 2 seconds **or** Power must be cycled off and on.

3. Set parameter **#75**, Field Voltage / Current Mode to **OFF**. This will set the unit for Current control. Press and hold the Mode Button for at least 2 seconds.

CONTROL TECHNIQUES

4. Set the motor information into the controller
   - **Par #70**, Rated field current, Section **1B**
   - **Par #73**, Rated field voltage, Section **1A**
   - **Par #69**, Minimum Flux

5. *Optional* Auto tune – This is suggested with controllers that are used in conjunction with field weakening applications.
   - Set par #12 (Auto tune) = On (1)
   - Set par #77 (Enable field control) = On (1)
   - This will adjust par #71 (P-gain) & Par #72 (I-gain)

6. Set field loss Terminals 8-10
7. Turn on field Par #77
8. Test & verify with Clamp on amp meter & Volt meter

Analog Current Control Mode

The original used a 0 to -10Vdc supply the new drive uses a 0 to +10Vdc reference.
1. There is no longer a -15Vdc supply
2. There is no longer a +15Vdc supply only a +10Vdc

Digital Control Mode

This was exclusively used with the FXM5 Drive along with a ribbon cable control.

CONTROL TECHNIQUES