Differential Step/Direction & Encoder Board (pn7737)

Document Revision 5

(Update August 29, 2024)

Atlanta, GA USA

For more information, please visit the product web page:

www.vitalsystem.com

Contents

License Agreement

Before using the 7737 and accompanying software tools, please take a moment to go thru this License agreement. Any use of this hardware and software indicate your acceptance to this agreement.

It is the nature of all machine tools that they are dangerous devices. In order to be permitted to use 7737 on any machine you must agree to the following license:

I agree that no-one other than the owner of this machine, will, under any circumstances be responsible, for the operation, safety, and use of this machine. I agree there is no situation under which I would consider Vital Systems, or any of its distributors to be responsible for any losses, damages, or other misfortunes suffered through the use of the 7737 board and its software. I understand that the 7737 board is very complex, and though the engineers make every effort to achieve a bug free environment, that I will hold no-one other than myself responsible for mistakes, errors, material loss, personal damages, secondary damages, faults or errors of any kind, caused by any circumstance, any bugs, or any undesired response by the board and its software while running my machine or device.

I fully accept all responsibility for the operation of this machine while under the control of 7737, and for its operation by others who may use the machine. It is my responsibility to warn any others who may operate any device under the control of 7737 board of the limitations so imposed.

I fully accept the above statements, and I will comply at all times with standard operating procedures and safety requirements pertinent to my area or country, and will endeavor to ensure the safety of all operators, as well as anyone near or in the area of my machine.

WARNING: Machines in motion can be extremely dangerous! It is the responsibility of the user to design effective error handling and safety protection as part of the system. VITAL Systems shall not be liable or responsible for any incidental or consequential damages. By using this product, you agree to the license agreement.

Introduction

The pn7737 Differential Step/Direction and Encoder Board allows access to the Step/Direction channels and more Encoder channels for the HiCON Integra (7866) or DSPMC (7763) .

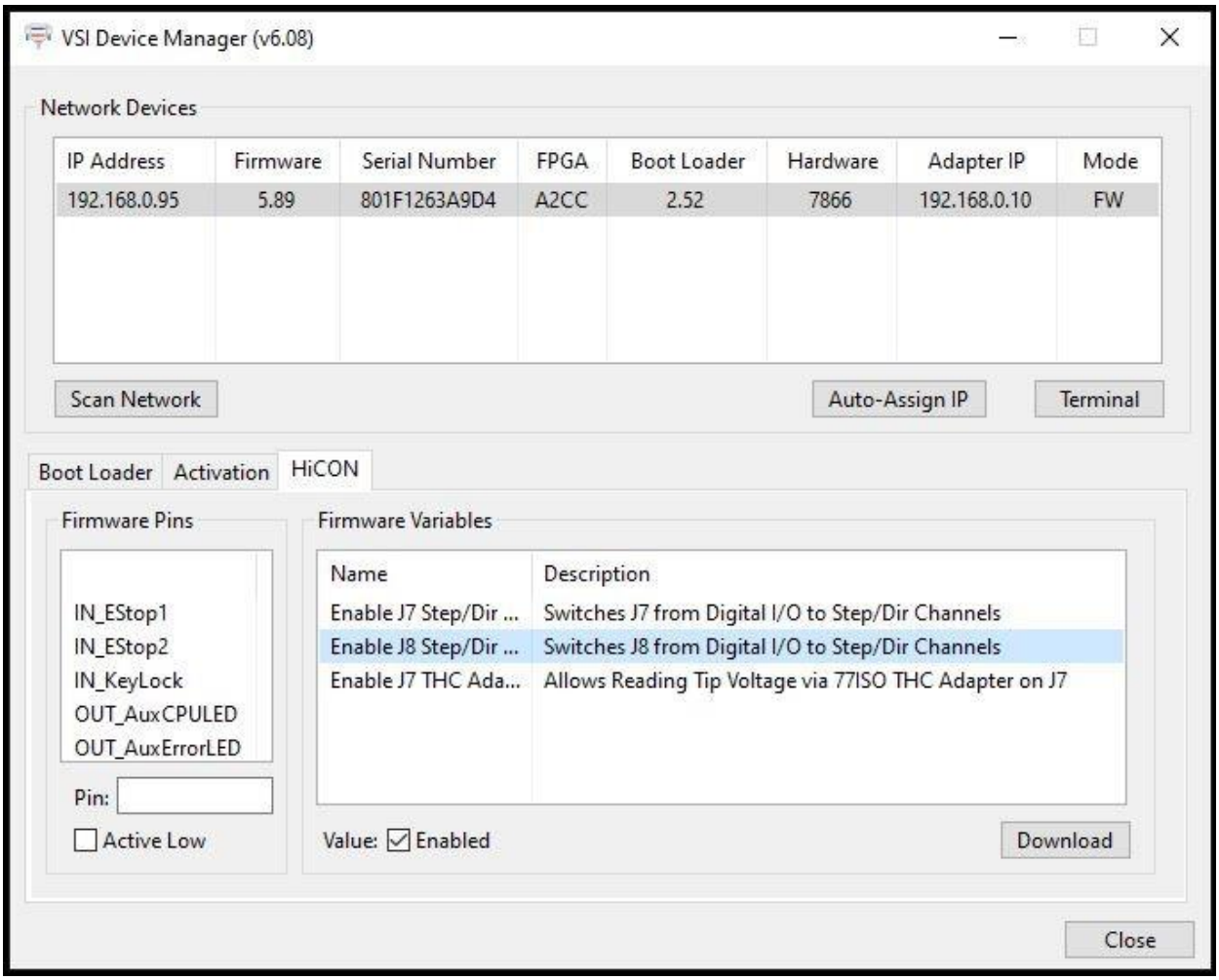
When used in tandem with a Drive Interface Board (EPx-DIB) for Maxsine AC Servo Drives, the 7737 allows a simple plug-and-play setup using HiCON Integra and DSPMC motion controllers.

Features:

- Color-coded RJ45 plugs for Controller-to-Drive Step/Dir and Encoder cables.
- 4 Differential Encoder Channels
- 4 Step/Dir Output Channels
- Status LEDs for I/O signals.

VSI Device Manager Setup

The Integra J8 and J7 as well as DSPMC J11 and J12 expansion headers must be enabled for 7737 step/dir before use. To do this, open the VSI Device Manager and scan the network for your device. Once the device is found and selected, open the HiCON or DSPMC tab, highlight the desired expansion port and mark the value for the Enabled option. Press the Download button to send the changes to the device. If you are only using one 7737 board, make sure to only enable one expansion header. If you enable both headers and only one 7737 board is plugged, it will be permanently stuck in estop condition.



Pre-requisites to get motion working on 7737 with:

HiCON Integra

The 7737 and Integra combo requires these steps for proper operation:

1. Make sure that Integra has an Extended I/O Activation.
2. Enable J7/J8 plugs for Step/Dir operation using VSI Device Manager.
3. Map the Drive Enable pin of 7737 on Mach4. Make sure the polarity is such that when Mach4 is enabled, blue LED lights up on the 7737 Board.

DSPMCv3

The 7737 and DSPMC require these steps for proper operation:

1. Enable J5/J6 plugs for use with the 7737 in the HiCON tab of the VSI Device Manager.
2. Map the Drive Enable pin of 7737 on Mach4. Make sure the polarity is such that when Mach4 is enabled, blue LED lights up on the 7737 Board.

HiCON Integra Connection Diagrams with Black 7866

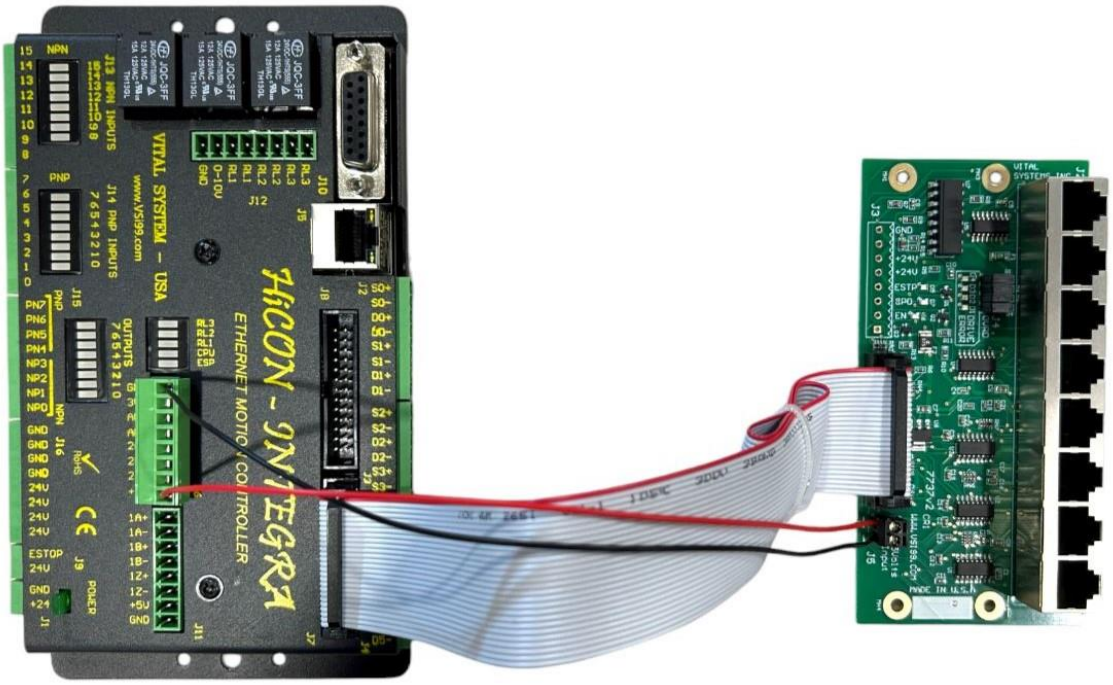
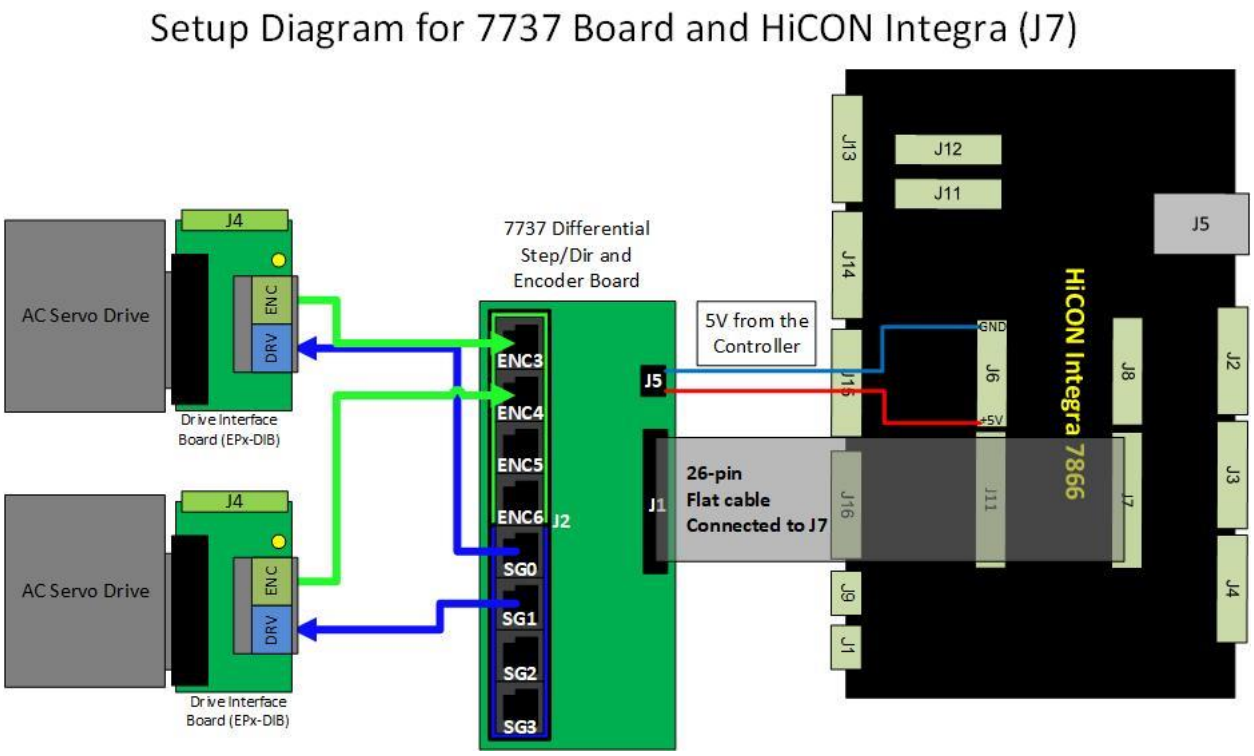


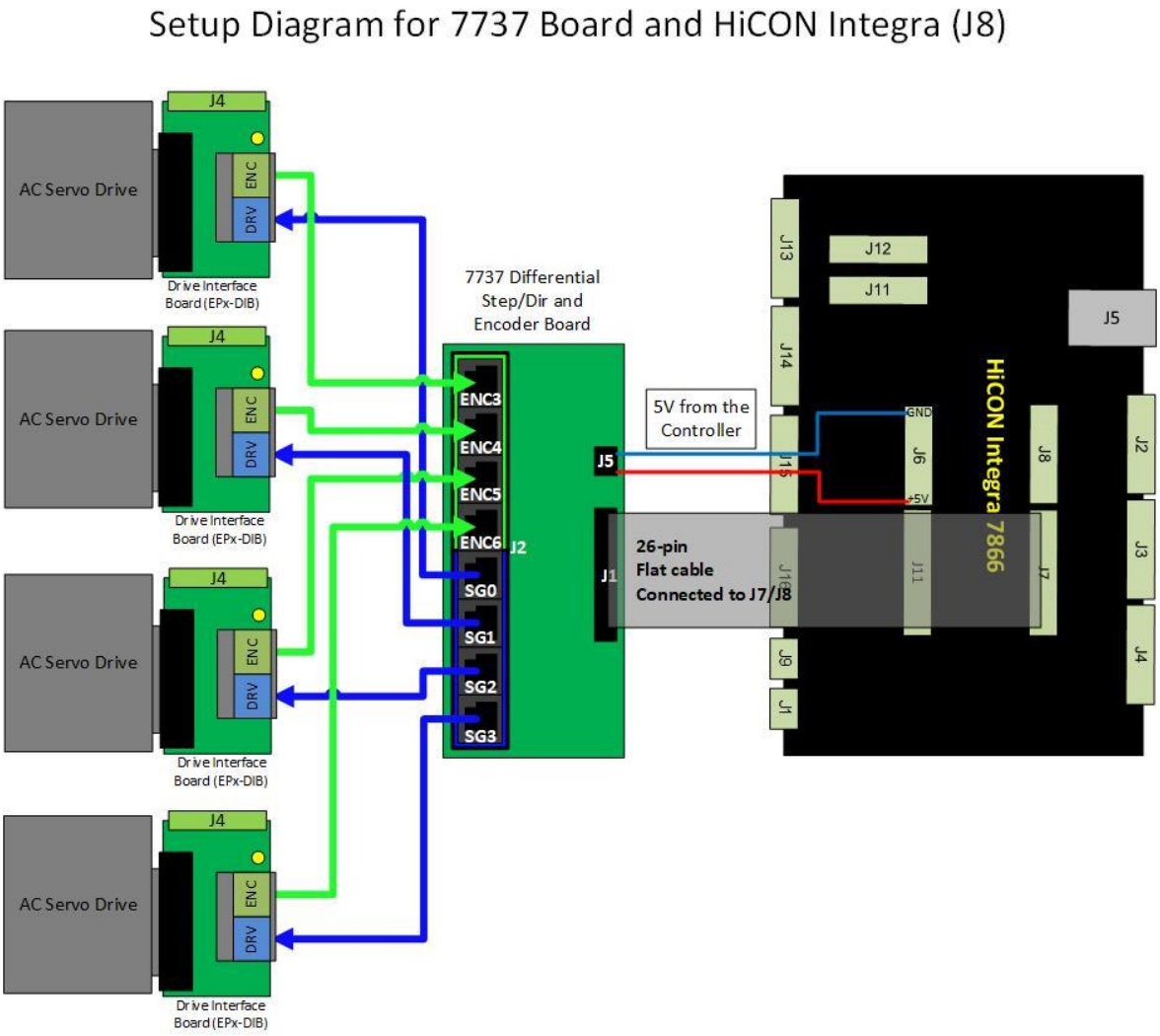
Figure 1 Wiring diagram of 7737 with HiCON Integra 7866

Connection to J7



Mach pin mapping (J7):
Drive Enable – Port12, Out4

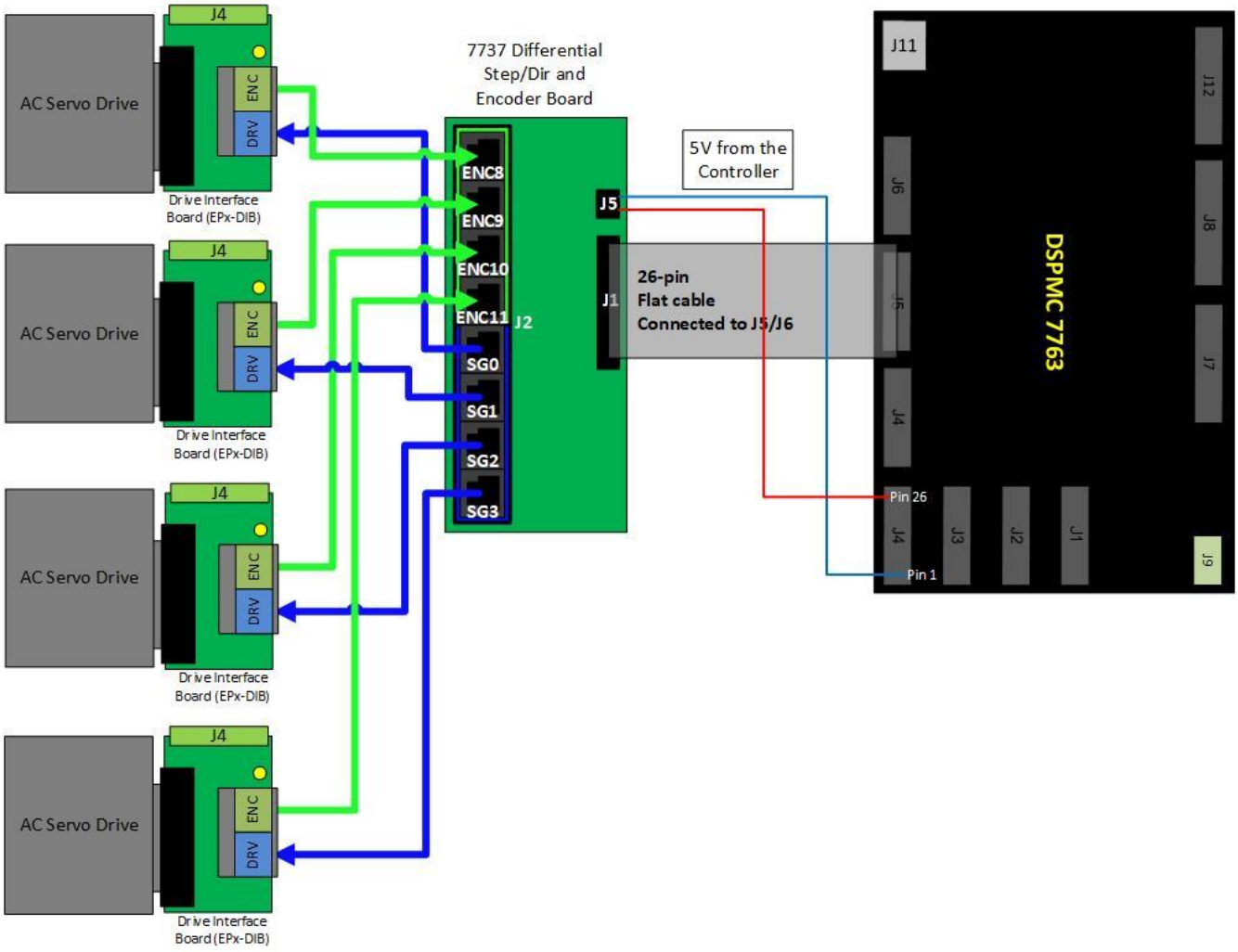
Connection to J8



Mach pin mapping (J8):
Drive Enable – Port14, Out4

Connection Diagram with DSPMC

Setup Diagram for 7737 Board and DSPMC

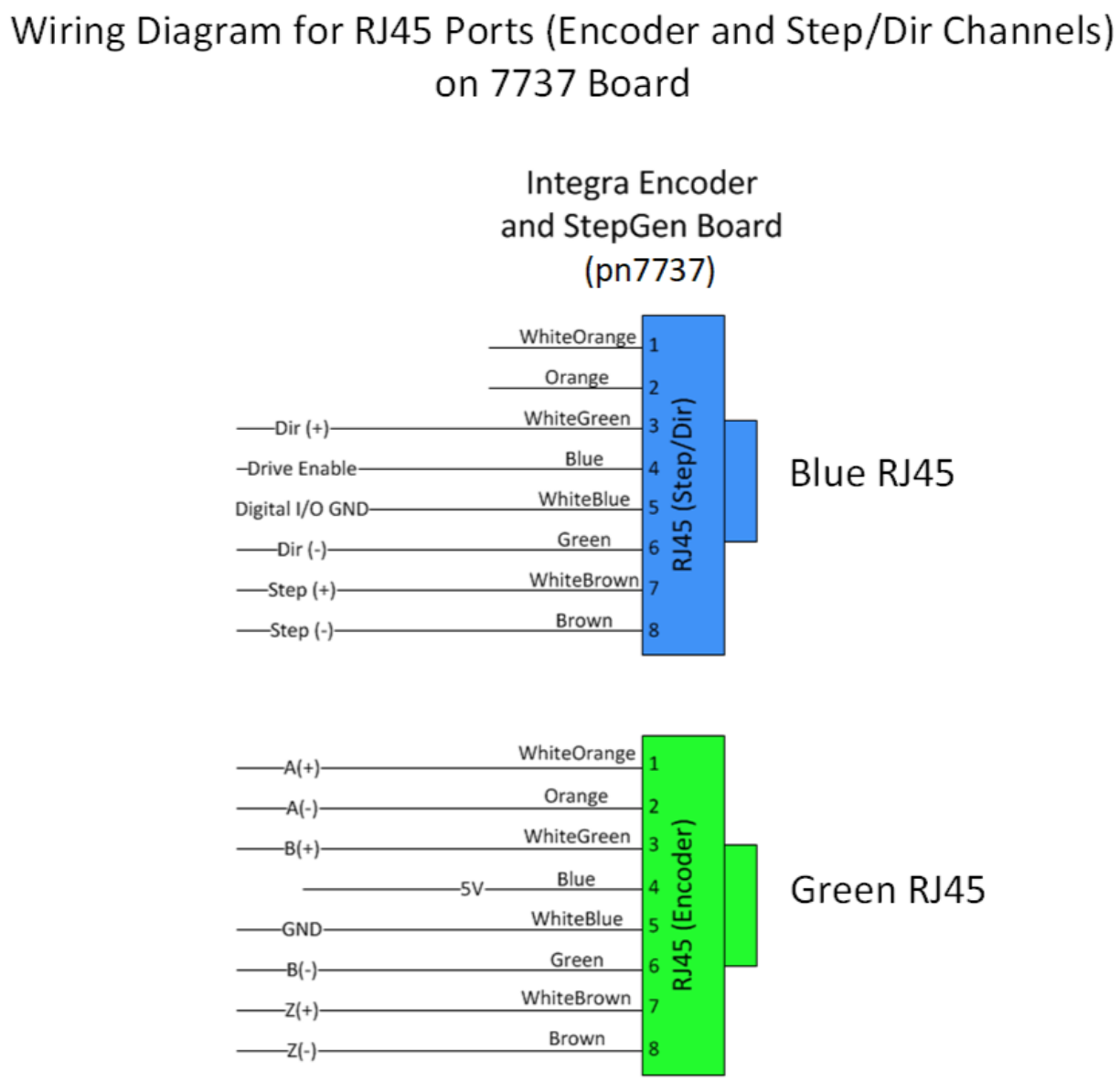


Mach pin mapping (J5):
Drive Enable – Port15, Ou04

Mach pin mapping (J6):
Drive Enable – Port15, Out2

Pin Layout on RJ45 Ports

Use straight-thru RJ45 patch cables when connecting the 7737 breakout board to the Maxsine EPx-DIB drive interface board.



The drawing below shows the connection between the servo drive and the 7737 board:

RJ45 to Servo/Stepper Drive Connections