Application Note #5512

Connecting a Faulhaber motor to Galil amplifiers

This application note describes the procedure to connect a Faulhaber motor (Model number: 4490 H 024 B K312) to a DMC-40x0 Accelera series controller with an AMP-43040 drive installed. The system setup is shown in Figure 1. This setup can be used with other controller and amplifier combinations like the DMC-21x3 with AMP-20540, and the CDS-3310 single axis controller-amplifier package.

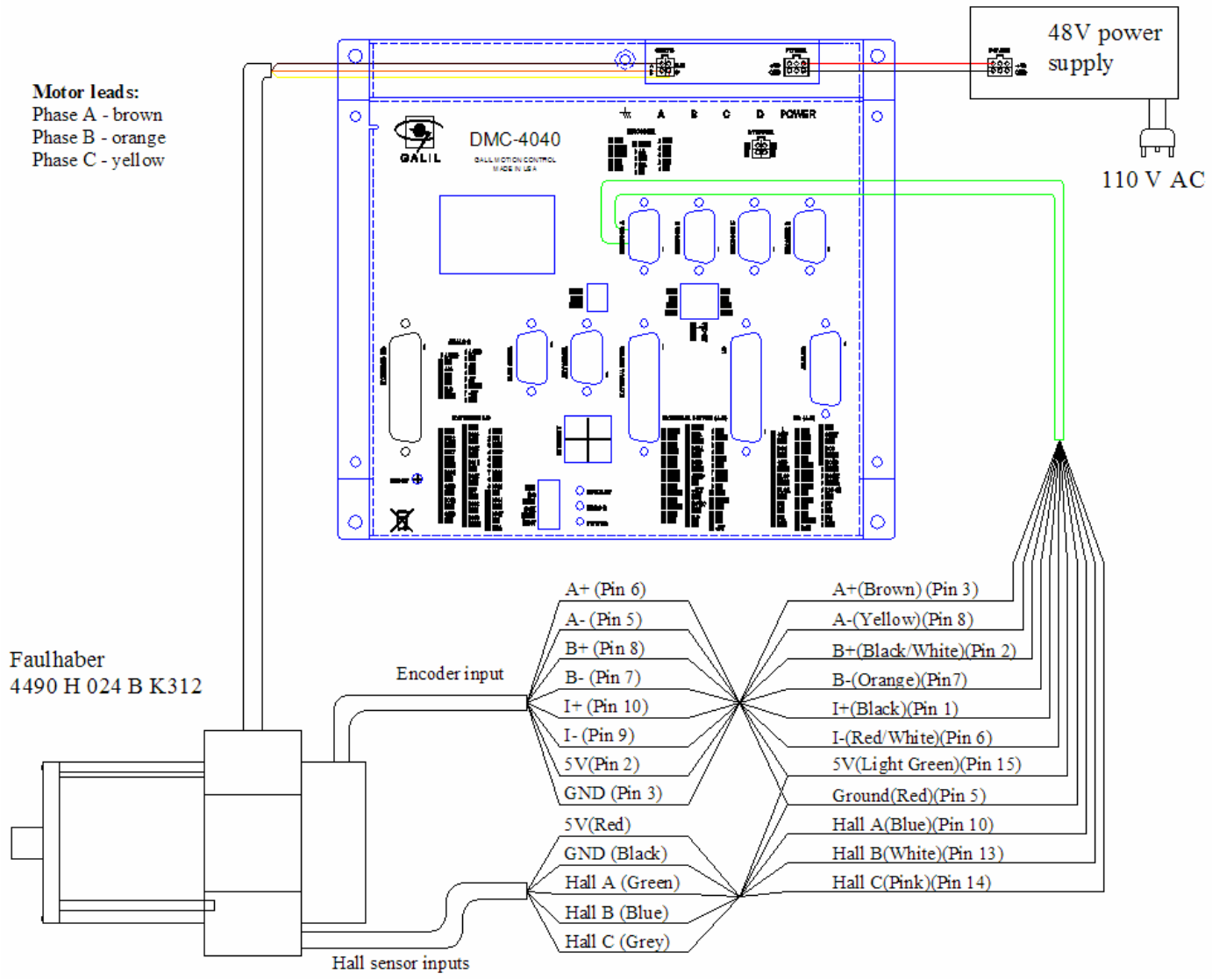

Figure 1 System Setup

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Hardware Required:

- Motor: *e.g.* Faulhaber 4490 H 024 B K312[1]
- Controller: DMC-40x0 with AMP-43040
- 48V power supply
- 15 pin high density cable with flying leads(part number: Cable-15pin-1m) or ICS-48015-M
- A PC running Windows XP and WSDK (for setting up and tuning the system)
- 100BaseT Ethernet cable and Hub or Crossover Ethernet cable

Figure 2 Faulhaber 4490 motor

Operation and Tuning

Table 1 shows the tuning parameters used under no load conditions to get the optimal step response.

Table 1 PID parameters (at amplifier gain setting AG 1) [2]

Parameter	Accelera (DMC-40x0)	Econo/Optima (DMC-21x3)
KD	525	1325
KP	50	177.25
KI	0.05	68.25

References:

1. Datasheet for Faulhaber 4490 H 024 B K312 <http://www.faulhaber-group.com/uploadpk/e_4490B_4490BS_MIN.pdf>
2. Datasheet for rotary encoder. <http://www.faulhaber-group.com/uploadpk/e_HEDL_DFF.pdf>
3. Description for AMP-205x0, AMP-20542 D sub Cables. <http://www.galilmc.com/support/appnotes/econo/note1241.pdf>
4. Data sheet for High Density D-Sub Connectors from Digi-Key. <http://dkc3.digikey.com/PDF/T063/0214-0215.pdf>
5. Data sheet for High Density D-Sub Cables from L-Com. <http://www.l-com.com/productfamily.aspx?id=1017>

[1] This is a low inductance motor. Hence, the amplifier should be set up to run in chopper mode (use AU 0.5 and AU 1.5 for selecting chopper mode with low and high current loop gain respectively.)

[2] Note: PID values for the Accelera series controllers vary from those used in Optima/Econo series controllers. Check Application Note 2501 for more details.

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