

Introduction

The combination of *ADVANCED* Motion Controls' servo drives and Dynomotion KFLOP controller with the Kanalog interface board has proven to be one of the most cost-effective motion control systems available. Providing up to 8 axes of control, both analog and DigiFlex® Performance™ servo drives that accept $\pm 10V$ analog, PWM and Direction, and Step and Direction input commands can work directly with the Dynomotion KFLOP and Kanalog hardware.

Command Type	KFLOP only	KFLOP with Kanalog
$\pm 10V$ Analog		✓
Step/Dir	✓	
PWM/Dir	✓	

This document will provide information on the connections necessary between an *ADVANCED* Motion Controls' servo drive and KFLOP Controller with and without the Kanalog interface board.

KFLOP Controller

The KFLOP controller is a motion controller that takes over the real-time requirements from a host computer by buffering data and running multiple simultaneous threads deterministically.

- 1.2 GFLOP DSP
- 64-bit double precision hardware math
- All 8 axes sampled every $90\mu s$
- USB 2.0 full speed host interface (or stand alone)
- 16MB RAM
- Digital I/O



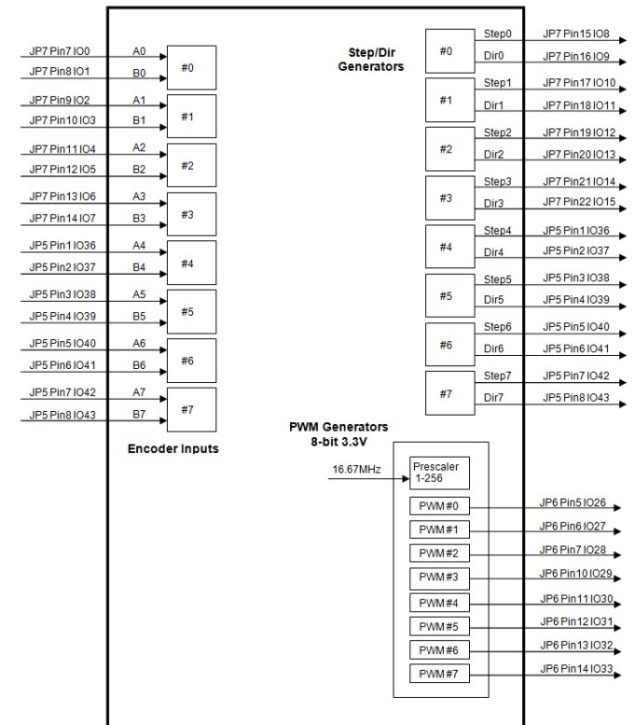
Interfacing with KFLOP Directly

The *ADVANCED* Motion Controls' drive models that can be used directly with the KFLOP controller are:

Drive Family	Command Types
DP...	Step/Dir, PWM/DIR
DZ...	Step/Dir, PWM/DIR
μ -sized AZ-drives	PWM/DIR

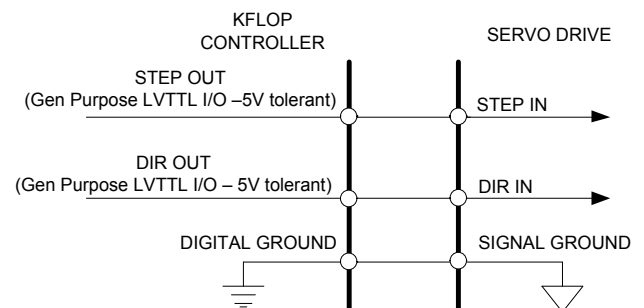
KFLOP Connectors

The KFLOP controller features connections for up to 8 axes of motion. Step/Dir and PWM/Dir output generators and single-ended encoder inputs are featured on connectors JP5, JP6, and JP7, as shown in the below figure.



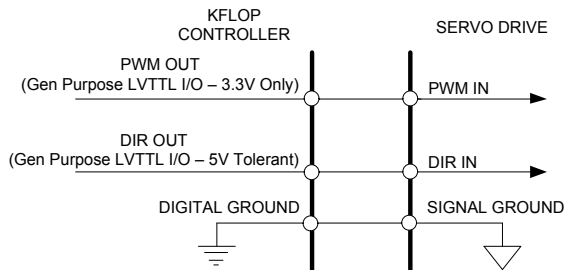
Step and Direction Connections

For servo drives that accept Step/Dir command inputs, connect the appropriate general purpose I/O pins from the KFLOP controller (JP5/JP7 STEP out and DIR out) to the corresponding STEP and DIR input pins on the servo drive. See the datasheet of the drive in use to determine which pins should be used. For digital drives, the STEP/DIR inputs are on Auxiliary Encoder pins.



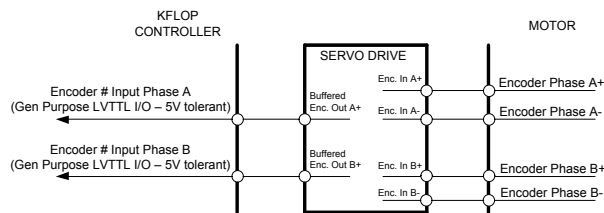
PWM and Direction Connections

For servo drives that accept PWM/Dir command inputs, connect the appropriate general purpose I/O pins from the KFLOP controller (JP6 PWM out and DIR out) to the corresponding PWM and DIR input pins on the servo drive. See the datasheet of the drive in use to determine which pins should be used. For digital drives, the PWM/DIR inputs are on Auxiliary Encoder pins. For analog drives, the PWM/DIR inputs are on the reference input pins.



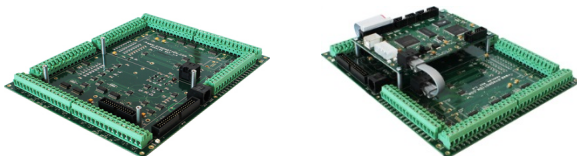
Encoder Connections

For digital servo drives with a buffered encoder output, connect the encoder feedback wires from the motor encoder to the drive feedback connector, and connect the buffered encoder outputs from the drive to the appropriate general purpose I/O pins on the KFLOP controller (JP5/JP7 Encoder # Input Phases A/B).



Interfacing with KFLOP and Kanalog

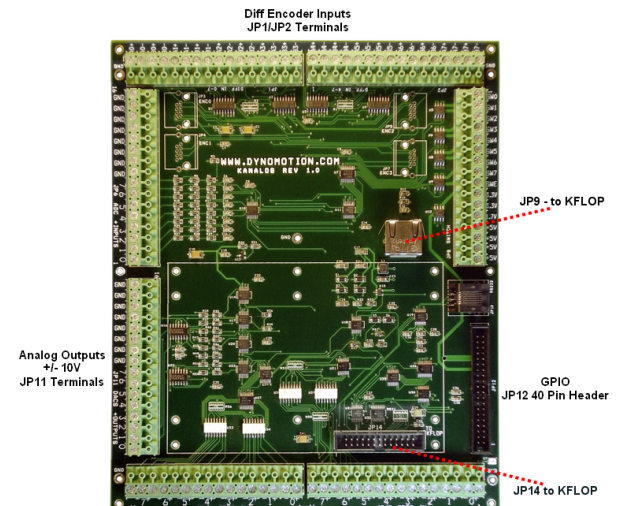
The Kanalog interface board is an expansion board for the KFLOP controller that is designed to interface to servo drives with $\pm 10V$ analog input commands.



The *ADVANCED* Motion Controls' drive models that can be used with a KFLOP controller installed on a Kanalog interface board are:

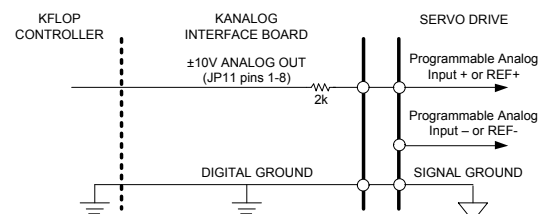
Drive Family	Command Types
DP...	$\pm 10V$ Analog
DZ...	$\pm 10V$ Analog
AZ...	$\pm 10V$ Analog
Brushless, Brushed	$\pm 10V$ Analog
μ -sized AZ-drives	$\pm 10V$ Analog

The Kanalog interface board features connections for digital and analog I/O (for $\pm 10V$ analog command inputs), encoder feedback, and other various drive and control functions. For basic connectivity to an *ADVANCED* Motion Controls' servo drive, only the command inputs and (optional) encoder feedback are covered in this document.



$\pm 10V$ Analog Connections

For servo drives that accept $\pm 10V$ analog input, connect analog outputs from JP11 on the the Kanalog interface board to the appropriate pins on the servo drive. See the datasheet of the drive in use to determine which pins should be used. For digital drives, use a differential analog input. For analog drives, use the $\pm REF$ inputs.



Encoder Connections

For servo drives that accept encoder feedback for velocity control, connect the encoder feedback wires from the motor encoder to the drive feedback connector, and connect the buffered encoder outputs from the drive to the appropriate differential receiver inputs on JP1/JP2 on the Kanalog interface board.

