Drive Application Software Application Set

Drive Appli Application	cation Set	Software					
Application Set	Title	Virtual Encoder Position Master with SL					
Drive Product	-	PowerFlex 700S	G -⊗-				
File Name for (AS)		AS_PF700S_VirtEncdr_PositMaster_SL.doc					
Date - Revision Attention:	This do suppler informa user ma	6/11/03 - 01 becument and related file(s) are designed to ment configuration of the listed drive product. The ation provided does not replace the drive products anual and is intended for qualified personnel only.					
Description:	The speed loop, position loop and virtual encoder in the PowerFlex 700S will be used to synchronize the speed and position of the PowerFlex 700S master and followers. This document is for setting up the master drive. Electronic gearing can be used to match the speed of PowerFlex 700S drives with different mechanical gear ratios or electronic gearing can be used to make the PowerFlex 700S drives run at different ratios.						
Limitations:	Require Require deceler	es that the motors on each PowerFlex 700S have encoder es dynamic braking or other method of dissipating regener ration.	s. ative energy during				
Options & Notes:	Default	configuration for 3 wire control through digital inputs may	be changed to 2 wire control				
110103.	This configuration is set for external dynamic braking. The values for P416 [Brake PulseWatts] and P417 [Brake Watts] must be loaded by the user.						
	After do	ownloading the *.dno file, power must be cycled on the ma e Synchl ink	ster and follower drives to				
	After downloading *.dno file, the Motor Data, Fdbk Config, Pwr Circuit Diag, Direction Test, Motor Tests, and Inertia Measure parts of the Startup routine should be performed to auto-tune the PF700S drive to the motor.						
	Please see AS_PF700S_VirtualEncdr_PositionFollower_wSynchlink.doc for information on independently jogging the master and follower drives, using the position offset, and setting up the electronic gear ratios.						

Drive Input & Ou	Itput Connections:

Inputs	Function	Description
DI 1	Start	
DI 2	Stop	
DI 3	Jog 1	Used to independently jog the Master when position loop is disabled.
DI 4	NA	
DI 5	NA	
DI 6	NA	
AI 1		
AI 2		
AI 3	NA	
Encoder 0	Motor Feedback	Encoder Input 0 is wired to the quadrature encoder on Master Motor.
Encoder 1		
Outputs	Function	Description
DO 1		
DO 2		
DO 3	NA	
AO 1		
AO 2		
AO 3	NA	



Drive Application Software Application Set

Parameter Configurations – **Master Drive** Changes from Default Parameter Settings

Par	Name	Value	Link	Description
23	Speed Trim 3		55	Speed Trim 3 comes from P55 [Speed Comp].
24	SpdTrim 3 Scale	0.002		The multiplier for speed compensation.
37	Spd Ref Bypass		45	The value of P45 [Delayed Spd Ref] becomes the speed reference for the master drive.
56	Inertia SpeedRef		45	The value of P45 [Delayed Spd Ref] becomes the speed reference for the inertia compensation block.
57	InertiaAccelGain	1		Inertia comp will add 100% of the required acceleration torque during accel.
58	InertiaDecelGain	1		Inertia comp will subtract 100% of the required deceleration torque during decel.
61	Virt Encoder EPR	Application Dependent		The virtual encoder EPR (edges per revolution) is set to 4 times the encoder PPR for the motor feedback.
89	Spd Err Filt BW	Application Dependent		Set to > 5 * P90 [Spd Reg BW]
90	Spd Reg BW			Gain of the speed loop. The speed loop should be tuned before enabling the position loop. See tech tip "20D-TT-BasicSpdTune" for tips on tuning the speed loop at the following link: <u>http://www.ab.com/drives/powerflex/pf700s/application</u> <u>tech/index.html</u>
95	SregOut Filt Gain	1		Disables the feed forward lead lag filter.
128	Regen Power Lim	-2		Allows up to 200% regenerative power to flow to the dynamic brake resistor.
151	Logic Command	B1 = 1 B10 = 1, B13 = 1		Bit 1 is on to enable the s-curve. Bit 10 is on to enable inertia compensation. Bit 13 can be turned on/off to enable/disable the position loop.
232	Encoder0 PPR	Application Dependent		Sets the PPR for the PF700S motor feedback.
414	Bus/Brake Cnfg	1111		Sets the drive up to do dynamic braking w/ external resistor first, then bus regulation.
416	Brake PulseWatts	Application Dependent		Sets the watt-second rating of the external dynamic brake resistor.
417	Brake Watts	Application Dependent		Sets the continuous watt rating of the external dynamic brake resistor.
743	Aux Posit Ref		63	P63 [Virt Encdr Dlyed] becomes the position reference in the master.
768	PositRef P Gain	Application Dependent		Sets the proportional gain for the position loop. Set this to 1/5 th of P90 after done tuning the speed loop.
838	DigIn1 Sel	Start		Start input for 3 wire control.
839	Dig In2 Sel	Normal Stop		Stop input for 3 wire control.
840	Dig In3 Sel	Jog 1		Used to independently jog the PF700S follower when the position loop is disabled.
1000	SL Node Cfg	B0 = 1, B1 = 0, B2 = 0		Sets the virtual master as the time keeper for Synchlink.
1020	SL Tx Format	9 – 0A, 4D, 8B		Selects the format of the transmit data to send 4 direct words @ 50µsec and 8 buffered words @ 0.5 msec.

Drive Application Software Application Set

Par	Name	Value	Link	Description
1021	SL Tx DirectSel 0	21 – Dir Tx		Indicates we are using the direct transmit buffer
		Data		(P1142) to send data.
1022	SL Tx DirectSel 1	21 – Dir Tx		Indicates we are using the direct transmit buffer
		Data		(P1143) to send data.
1140	Tx Dir Data Type	B0 = 1		Indicates that transmit word 0 is floating point data,
				not integer.
11/2			12	Sends the value of P43 [S Curve Spd Ref] over
1142	SE DII Real 1x0		43	Synchlink.
11/2	SI Dir Int Ty1		62	Sends the value of P62 [Virt Encdr Posit] over
1143			02	Synchlink.

