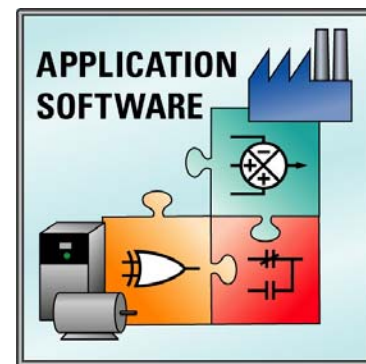


Drive Application Software Application Set

Application Set Title	TorqProve™ - Overhead Crane, Encoderless		
Drive Product	PowerFlex® 700 Vector Control (Series B)		
File Name for (AS)	AS PF700 Overhead Crane no enc TorqProve.doc		
Date / Revision	4/13/05	-	01



Attention: This document and related file(s) are designed to supplement configuration of the listed drive product. The information provided does not replace the drive products user manual and is intended for qualified personnel only.

Description: TorqProve programming of an overhead crane without an encoder. PLC was used to send digital signals to drive for starting and stopping only.
Reference Application Brief Publication:
PowerFlex 700 App Brief-Overhead Crane(Encoderless), [20B-AP002A-EN-P](#) – April 2005

Limitations: Care should be taken with any encoderless lift application. It should only be used where personal safety is not a concern. It does not offer as much protection as an application with encoders. Please review the Application Notes in the User Manual for additional information.

Options & Notes: **ATTENTION:** To guard against personal injury and/or equipment damage caused by unexpected brake release, verify the Digital Out 1 brake connections and/or programming. The **default** drive configuration energizes the Digital Out 1 relay when power is applied to the drive. The PowerFlex 700 drive **will not control the mechanical brake until TorqProve is enabled**. If the brake is connected to this relay, it could be released. If necessary, **disconnect the relay output until wiring/programming can be completed and verified**.

Drive Input & Output Connections:

Inputs	Function	Description
DI 1	(0 - Not Used)	
DI 2	(0 - Not Used)	
DI 3	30 - Precharge En	P363
DI 4	(0 - Not Used)	
DI 5	(0 - Not Used)	
DI 6	1 - Enable	P366
AI 1		Not Used
AI 2		Not Used
Outputs	Function	Description
D0 1	4 - Run	P380 - Brake relay output. Only terminals 12 & 13 should be used. When TorqProve is "enabled" in P600, Relay 1 is dedicated for brake control only. (All other programmed selections are ignored.)
D0 2		Not Used
D0 3		Not Used
A0 1		Not Used
A0 2		Not Used

Drive Application Software

Application Set

Parameter Configurations

Changes from Default Parameter Settings (Any listed defaults are in gray.)

Par	Name	Value	Link	Description
41-45	Motor NP . . .	per nameplate		(Data entered per motor nameplate)
53	Motor Cntl Sel	4 -"FVC Vector"		User should do an autotune for best the performance.
55	Maximum Freq	66 Hz		User should do an autotune for best the performance.
58	Flux Up Time	0.213 Sec.		
79	Speed Units	RPM		
80	Feedback Select	1 - "Slip Comp"		Encoderless operation
81	Minimum Speed	86 RPM		Twice slip RPM (good for encoderless operation)
90	Speed Ref A Sel	22 -"DPI Port 5"		
121	Slip RPM	43 RPM		
140	Accel Time 1	2.0 Sec.		
142	Decel Time 1	2.0 Sec.		
301 - 316	Data Links			ControlNet communication was used for start/stop and speed referencing.
***	TorqProve Settings			
600	TorqProve Cnfg	Bit 0 = 1 Bit 1 = 1		This "enables" TorqProve and Digital Output 1 will now control the mechanical brake (Note: This will cause a Fault 28 which requires user to read the "Attention" in the User Manual on page C-5)
601	TorqProve SetUp	0		Default – used only if using communications to control TorqProve parameters.
602	Spd Dev Band	400 RPM		Default - Not active in Sensorless Vector
603	Spd Band Integrator	200 mSec.		Default - Not active in Sensorless Vector
604	Brake Release Time	0.10 Sec		Default
605	ZeroSpdFloatTime	10.0 Sec		Default - Not used in encoderless mode
606	Float Tolerance	150 RPM		Approximately 3 times slip RPM
607	Brk Set Time	0.10 Sec		Default
608	TorqLim SlewRate	10.0 Sec		Default - Not used in encoderless mode
609	BrkSlip Count	250 Revs		Default - Not used in encoderless mode
610	Brk Alarm Travel	1.0 Rev		Default - Not used in encoderless mode
611	MicroPos Scale%	10 %		Default – Not used in this application

Encoderless notes:

- Though it was not required in this application since the user is always running at 1500RPM, it is always good to set P81 [Minimum Speed] to **two or three times the slip frequency** when in encoderless mode. (Example: A 1740 RPM motor has 2 Hz of slip so set Minimum Speed to 4-6Hz.)
- It is also desirable (but not 100% necessary) to set P606 [Float Tolerance] to **one to three times the slip frequency** when in encoderless mode. This should be set a value that approaches this value but still gives acceptable performance.