



Application Guide

Topic: Inertia Compensation for Changing Diameters

Drive Product: PowerFlex 700S – Phase I Control

Introduction An Application Guide provides generic information on features and functions of drive products and their implementation. Application Guides are not specific to any one application, but generically discuss application techniques and/or functions as part of an application.

User Information Solid state equipment has operational characteristics differing from those of electromechanical equipment. *Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls* (Publication SGI-1.1 available from your local Rockwell Automation sales office or online at <http://www.ab.com/documents/gj>) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this document are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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Related Publications The following publications should be referenced and followed when operating, configuring, or commissioning this drive product. These publications may be found on the automation book store at www.theautomationbookstore.com ;

Publication Title	Pub Number
PowerFlex 700S Phase I Control User Manual	20D-UM001
PowerFlex 700S Phase I Control Reference Manual	PFlex-RM002
PowerFlex 700S Phase I Control Firmware Release Notes	20D-RN004
PowerFlex 700S Phase I Control Quick Start	20D-QS001



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Precautions

Class 1 LED Product



ATTENTION: Hazard of permanent eye damage exists when using optical transmission equipment. This product emits intense light and invisible radiation. Do not look into module ports or fiber optic cable connectors.

General Precautions



ATTENTION: This drive contains ESD (Electrostatic Discharge) sensitive parts and assemblies. Static control precautions are required when installing, testing, servicing or repairing this assembly. Component damage may result if ESD control procedures are not followed. If you are not familiar with static control procedures, reference Allen Bradley publication 8000-4.5.2, "Guarding Against Electrostatic Damage" or any other applicable ESD protection handbook.



ATTENTION: An incorrectly applied or installed drive can result in component damage or a reduction in product life. Wiring or application errors such as under sizing the motor, incorrect or inadequate AC supply, or excessive surrounding air temperatures may result in malfunction of the system.



ATTENTION: Only qualified personnel familiar with the PowerFlex 700S AC Drive and associated machinery should plan or implement the installation, start-up and subsequent maintenance of the system. Failure to comply may result in personal injury and/or equipment damage.



ATTENTION: To avoid an electric shock hazard, verify that the voltage on the bus capacitors has discharged before performing any work on the drive. Measure the DC bus voltage at the +DC & -DC terminals of the Power Terminal Block (refer to Chapter 1 in the PowerFlex 700S User Manual for location). The voltage must be zero.



ATTENTION: Risk of injury or equipment damage exists. DPI or SCANport host products must not be directly connected together via 1202 cables. Unpredictable behavior can result if two or more devices are connected in this manner.



ATTENTION: Risk of injury or equipment damage exists. Parameters 365 [Encdr0 Loss Cnfg] - 394 [VoltFdbkLossCnfg] let you determine the action of the drive in response to operating anomalies. Precautions should be taken to ensure that the settings of these parameters do not create hazards of injury or equipment damage.

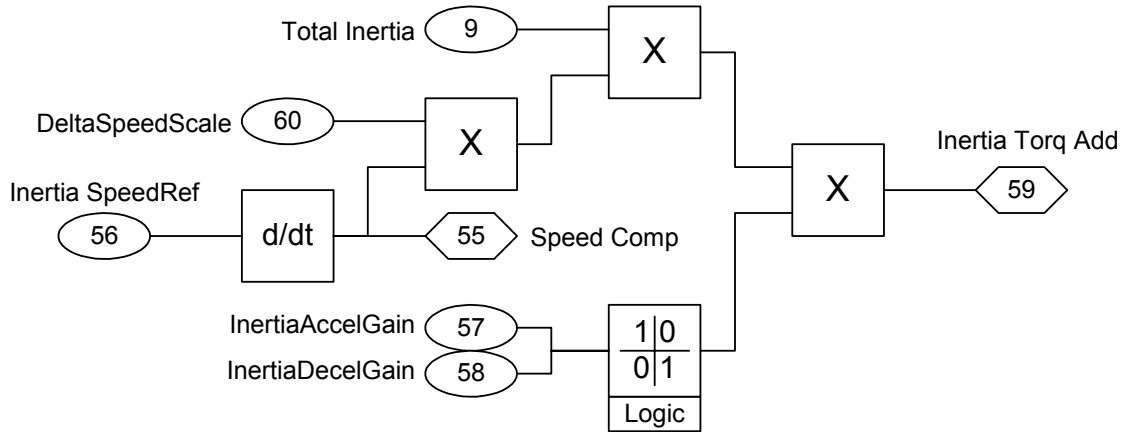


ATTENTION: Risk of injury or equipment damage exists. Parameters 383 [SL CommLoss Data] - 392 [NetLoss DPI Cnfg] let you determine the action of the drive if communications are disrupted. You can set these parameters so the drive continues to run. Precautions should be taken to ensure the settings of these parameters do not create hazards of injury or equipment damage.

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Technical Information

Parameter 60 [DeltaSpeedScale] is a new parameter added to the PowerFlex 700S in firmware revision 1.14. This parameter is part of the inertia compensation circuit, and scales the delta speed as a multiplier after the $\Delta n/\Delta t$ (delta speed/delta time) calculation.



This function could be used to scale the inertia calculation based on changes of roll diameter. If the speed reference to the drive is scaled for line speed at core diameter and not scaled per actual diameter [Speed Comp] P55 would be in error. This configuration may be used if the user wishes to use the independent jog speeds built in the drive. [Speed Comp] must be scaled to reflect the actual rotational speed. To do this, the user should write the value of diameter build up ratio {core diameter / actual diameter} to [DeltaSpeedScale] P60. This will generate a build up ratio to core diameter. The diameter build up ratio must also be written to [Speed Ref scale] P38.