Allen-Bradley

PowerFlex® 700S

High Performance AC Drive

Phase II Control

Firmware Versions
1.xx - 3.01

User Manual

Rockwell Automation

Important 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.rockwellautomation.com/literature**) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also 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 manual 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.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual, when necessary we use notes to make you aware of safety considerations.

WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

Important: Identifies information that is critical for successful application and understanding of the product.

ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you:

- identify a hazard
- avoid the hazard
- recognize the consequences

Shock Hazard labels may be located on or inside the equipment (e.g., drive or motor) to alert people that dangerous voltage may be present.

Burn Hazard labels may be located on or inside the equipment (e.g., drive or motor) to alert people that surfaces may be at dangerous temperatures.

Manual Updates

This information summarizes the changes to the *PowerFlex 700S High Performance AC Drive - Phase II Control User Manual*, publication 20D-UM006, since the August 2005 release.

Change	See Page...
The following new parameters were added for firmware versions 3.01: 49 [Selected SpdRefA] 50 [Selected SpdRefB] 54 [Inertia TrqLpfBW] 119 [SLAT ErrorSetpnt] 120 [SLAT Dwell Time] 341 [Mtr I2T Count] 368 [Cnv NotLogin Cfg] 533 [Flux Gain Adjust] 551 [CurrFdbk AdjTime] 552 [Slip Preload Val] 553 [Slip Slew Rate] 554 [LED Status] 669 [Write Mask] 712 [Write Mask Act] 713 [Logic Mask Act] 714 [Port Mask Act] 717 [PLL TP Select] 718 [PLL TP DataDInt] 719 [PLL TP DataReal] 720 [PLL Control] 721 [PLL Position Ref] 722 [PLL BandWidth] 723 [PLL Rev Input] 724 [PLL Rev Output] 725 [PLL EPR Input] 726 [PLL EPR Output] 727 [PLL VirtEncdrRPM] 728 [PLL Ext Spd Ref] 729 [PLL Ext SpdScale] 730 [PLL LPFilter BW] 731 [PLL Posit Out] 732 [PLL Posit OutAdv] 733 [PLL FiltPositOut] 734 [PLL Speed Out] 735 [PLL SpeedOut Adv] 848 [Dig Out1 On Time] 849 [Dig Out1 OffTime] 853 [Dig Out2 On Time] 854 [Dig Out2 OffTime] 858 [Rly Out3 On Time] 859 [Rly Out3 OffTime] 1093 [Anlg In1LossCnfg] 1094 [Anlg In2LossCnfg] 1095 [Anlg In3LossCnfg] 1096 [AddSub 1 Input] 1097 [AddSub 1 Add] 1098 [AddSub 1 Subtrct] 1099 [AddSub 1 Result] 1100 [AddSub 2 Input] 1101 [AddSub 2 Add] 1102 [AddSub 2 Subtrct] 1103 [AddSub 2 Result] 1104 [AddSub 3 Input] 1105 [AddSub 3 Add] 1106 [AddSub 3 Subtrct] 1107 [AddSub 3 Result] 1108 [DelTmr1 TrigData] 1109 [DelTmr1 Trig Bit] 1110 [DelayTimer1PrSet] 1111 [DelayTimer1Accum] 1112 [DelayTimer1Stats] 1113 [DelTmr2 TrigData] 1114 [DelTmr2 Trig Bit] 1115 [DelayTimer2PrSet] 1116 [DelayTimer2Accum] 1117 [DelayTimer2Stats] 1120 [Home Accel Time] 1121 [Home Decel Time] 1122 [Home Speed] 1123 [Home Position] 1125 [DC Brake Level] 1126 [DC Brake Time] 1130 [PPMP Pos Command] 1131 [PPMP Pos Mul] 1132 [PPMP Pos Div] 1133 [PPMP Scaled Cmd] 1134 [PPMP Control] 1135 [PPMP Status] 1136 [PPMP Rev Spd Lim] 1137 [PPMP Fwd Spd Lim] 1138 [PPMP Over Ride] 1139 [PPMP Accel Time] 1140 [PPMP Decel Time] 1141 [PPMP SCurve Time] 1142 [PPMP Spd Output] 1143 [PPMP Pos Output] 1144 [PPMP Pos To Go] 1145 [PPMP TP Select] 1146 [PPMP TP DataDInt] 1147 [PPMP TP DataReal] 1150 [DInt2Real2 In] 1151 [DInt2Real2 Scale] 1152 [DInt2Real2Result]	3-1-3-108

Change	See Page...
The following parameters were updated for firmware version 3.01: 81 [Spd Reg P Gain] 84 [SpdReg AntiBckup] 92 [SpdReg P Gain Mx] 110 [Speed/TorqueMode] 132 [Inert Adapt Sel] 147 [FW Functions En] 149 [FW FunctionsActl] 150 [Logic State Mach] 153 [Control Options] 157 [Logic Ctrl State] 165 [Tune Test Status] 222 [Mtr Fdbk Sel Pri] 223 [Mtr Fdbk Alt Sel] 224 [TachSwitch Level] 259 [Stegmann0 Cnfg] 263 [Heidenhain0 Cnfg] 264 [Heidenhain0 Stat] 266 [Heidn Encdr Type] 306 [DC Bus Voltage] 322 [Exception Event3] 325 [Fault Status 3] 328 [Alarm Status 3] 370 [HiHp InPhsLs Cfg] 412 [Power EE TP Sel] 414 [Brake/Bus Cnfg] 416 [Brake PulseWatts] 417 [Brake Watts] 420 [Pwr Strct Mode] 465 [MC Diag Error 3] 466 [MC TP1 Select] 475 [MC FaultTPSelect] 486 [Rated Slip Freq] 490 [StatorInductance] 510 [FVC Mode Config] 511 [FVC2 Mode Config] 512 [PMag Mode Config] 514 [Test Mode Config] 549 [Vuv Fdbk Offset] 550 [Vvw Fdbk Offset] 740 [Position Control] 741 [Position Status] 742 [Position Ref Sel] 777 [PositionFdbk Sel] 796 [Posit Gear Ratio] 825 [Dig In1 Sel] 826 [Dig In2 Sel] 827 [Dig In3 Sel] 828 [Dig In4 Sel] 829 [Dig In5 Sel] 830 [Dig In6 Sel] 904 [SL Node Cnfg] 905 [SL Rx CommFormat] 906 [SL Rx DirectSel0] 907 [SL Rx DirectSel1] 908 [SL Rx DirectSel2] 909 [SL Rx DirectSel3] 910 [SL Tx Comm Format] 911 [SL Tx DirectSel0] 912 [SL Tx DirectSel1] 913 [SL Tx DirectSel2] 914 [SL Tx DirectSel3] 1000 [UserFunct Enable] 1047 [DInt2Real1 In] 1048 [DInt2Real1 Scale] 1049 [DInt2Real1Result]	3-1-3-108
The following new fault codes were added for firmware version 3.01: 76 HiHP HardwareVer 77 HiHP CurrUnblnce 78 HiHP VoltUnblnce 94 Analog In 1 Loss 95 Analog In 2 Loss 96 Analog In 3 Loss	4-4
Encoder specifications updated	A-1 & A-6
Updated and new Control Block Diagrams	B-1

This information summarizes the changes to the *PowerFlex 700S High Performance AC Drive - Phase II Control User Manual*, publication 20D-UM006 since the August 2004 release.

Change	See Page...
URL for Rockwell Automation Technical Support added	Preface-2
Catalog Number Explanation updated	Preface-5
DIP Switch Settings table updated	1-28
The following new parameters were added for firmware versions 2.03 and 2.04: • 42 [Jerk] 332 [700L EventStatus] 483 [VPL Mem Link Int] • 98 [Slip RPM @ FLA] 333 [700L FaultStatus] 484 [VPL Mem Link Flt] • 99 [Slip Comp Gain] 334 [700L AlarmStatus] 513 [V/Hz Mode Config] • 107 [Slip RPM Meter] 362 [Current Limit Gain] 527 [Start/Acc Boost] • 136 [Skip Speed 1] 363 [Ki Current Limit] 528 [Run Boost] • 137 [Skip Speed 2] 364 [Kd Current Limit] 529 [Break Voltage] • 138 [Skip Speed 3] 471 [Estimated Torque] 530 [Break Frequency] • 139 [Skip Speed Band] 473 [MC TP2 Select] 531 [Maximum Voltage] • 170 [Flying StartGain] 474 [MC TP2 Value] 532 [Maximum Freq] • 263 [Heidenhain0 Cnfg] 475 [MC FaultTPSelect] 541 [SrLss Angl Comp] • 264 [Heidenhain0 Stat] 476 [MC FaultTP Value] 542 [SrLss Volt Comp] • 265 [Heidn Mkr Offset] 478 [VPL Mem Password] 545 [Bus Reg Ki] • 266 [Heidn Encdr Type] 479 [VPL Mem Address] 546 [Bus Reg Kp] • 267 [Heidn Encdr PPR] 480 [VPL Mem Data Int] 547 [Bus Reg Kd] • 285 [Linear1 Config] 481 [VPL Mem Data Flt] 548 [Bus Reg ACR Kp] • 296 [Motor Freq Ref] 482 [VVPL Mem Data Bit] The following parameters were updated for firmware versions 2.03 and 2.04: • 153 [Control Options] 347 [Drive OL TP Sel] 830 [Dig In6 Sel] • 245 [Spd Fdbk TP Sel] 466 [MC TP1 Select] 905 [SL Rx CommFormat] • 266 [Heidn Encdr Type] 787 [Xsync Gen Period] 906 [SL Rx DirectSel0] • 268 [Resolver0 Cnfg] 825 [Dig In1 Sel] 907 [SL Rx DirectSel1] • 272 [Reslvr0 SpdRatio] 826 [Dig In2 Sel] 908 [SL Rx DirectSel2] • 316 [SynchLink Status] 827 [Dig In3 Sel] 909 [SL Rx DirectSel2] • 322 [Exception Event3] 828 [Dig In4 Sel] 1000 [UserFunct Enable] • 328 [Alarm Status 3] 829 [Dig In5 Sel]	3-1-3-108
Added new fault codes and descriptions/actions	4-4
Specifications Table and Recommended Protection Devices tables updated	A-1 & A-6
Updated and New Control Block Diagrams	B-1
Updated “HIM Overview” to include HIM menu chart and steps for viewing, editing and linking parameters using the HIM.	D-1
Added new Appendix I - *PowerFlex 700S Permanent Magnet Motor Specifications*	I-1

Notes:

Overview

The purpose of this manual is to provide you with the basic information needed to install, start-up and troubleshoot the PowerFlex® 700S Adjustable Frequency AC Drive with Phase II Control.

Who Should Use This Manual

This manual is intended for qualified personnel. You must be able to program and operate Adjustable Frequency AC Drive devices. In addition, you must have an understanding of the parameter settings and functions. You must also understand programmable controllers for the PowerFlex 700S with DriveLogix.

What Is Not In This Manual

Since this *User Manual* is designed to provide only basic start-up information for Frames 1 - 6, the following topics have not been included:

- Spare Parts Information
- Installation instructions for frames 9 - 12

For detailed drive information, please refer to the *PowerFlex 700S AC Drive with Phase II Control - Reference Manual*, publication PFLEX-RM003. Please refer to the tables below for more information on recommended documentation.

Recommended Documentation

The following publications provide general drive information.

Title	Publication	Available...
Wiring and Grounding for PWM AC Drives	DRIVES-IN001	www.rockwellautomation.com/literature
Safety Guidelines for the Application, Installation and Maintenance of Solid State Control	SGI-1.1	
A Global Reference Guide for Reading Schematic Diagrams	100-2.10	
Guarding Against Electrostatic Damage	8000-4.5.2	

The following publications provide detailed PowerFlex® 700S drive information:

Title	Publication	Available...
PowerFlex Reference Manual, Phase II Control	PFLEX-RM003	www.rockwellautomation.com/literature
PowerFlex 700S and 700H Adjustable Frequency Drives for Frames 9 - 11	PFLEX-IN006	

The following publications provide specific PowerFlex 700S drive features information:

Title	Publication	Available...
Installation Instructions - Stegmann Feedback Option for PowerFlex 700S Drive	20D-IN001	www.rockwellautomation.com/literature
Installation Instructions - Resolver Feedback Option for PowerFlex 700S Drives	20D-IN002	
Installation Instructions - Multi-Device Interface for PowerFlex 700S Drive	20D-IN004	
Installation Instructions - Second Encoder Option for PowerFlex 700S Drives with Phase II Control	20D-IN009	
Firmware Release Notes - PowerFlex 700S Drive & DriveLogix	20D-RN007	

For Allen-Bradley Drives Technical Support:

Title	Online at...
Allen-Bradley Drives Technical Support	www.rockwellautomation.com/literature **or** call M-F, 7:00a.m. to 7:00p.m. Central STD time: 1.262.512.8176

For Automation and Control Technical Support:

Title	Online at...
Rockwell Automation Technical Support	http://support.rockwellautomation.com/knowledgebase

The following publications provide necessary information when applying the DriveLogix Controller.:

Title	Publication	Available...
DriveLogix5730 Controller User Manual	20D-UM003	www.rockwellautomation.com/literature
PowerFlex 700S Drive & DriveLogix Controller	20D-RN007	
Logix5000 Controllers Common Procedures	1756-PM001	
Logix5000 Controllers General Instructions	1756-RM003	
Logix5000 Controllers Process Control and Drives Instructions	1756-RM006	
RSLogix 5000 Getting Results	9399-RLD300GR	
RSNetworx for ControlNet Getting Results	9398-CNETGR	
RSLinx Getting Results Guide	9399-LINXGR	

The following publications provide information that is useful when planning and installing communication networks:

Title	Publication	Available...
ContolNet Coax Tap Installation Instructions	1786-5.7	www.rockwellautomation.com/literature
ControlNet Cable System Planning and Installation Manual	1786-6.2.1	
ContolNet Fiber Media Planning and Installation Guide	CNET-IN001	

Manual Conventions

- In this manual we refer to the PowerFlex 700S Adjustable Frequency AC Drive as: drive, PowerFlex 700S, PowerFlex 700S drive or PowerFlex 700S AC drive.
- To help differentiate parameter names and LCD display text from other text, the following conventions will be used:
  - Parameter Names will appear in [brackets] after the Parameter Number.
    For example: Par 307 [Output Voltage].
  - Display text will appear in “quotes.” For example: “Enabled.”
- The following words are used throughout the manual to describe an action:

Word	Meaning
Can	Possible, able to do something
Cannot	Not possible, not able to do something
May	Permitted, allowed
Must	Unavoidable, you must do this
Shall	Required and necessary
Should	Recommended
Should Not	Not recommended

Drive Frame Sizes

Similar PowerFlex 700S drive sizes are grouped into frame sizes to simplify spare parts ordering, dimensioning, etc. A cross reference of drive catalog numbers and their respective frame size is provided in Appendix A.

General 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.

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 A-B 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, undersizing the motor, incorrect or inadequate AC supply, or excessive ambient temperatures may result in malfunction of the system.

ATTENTION: Only **qualified personnel** familiar with the PowerFlex 700S 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 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 [Fdbk LsCnfg Pri] - 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 that the drive continues to run. Precautions should be taken to ensure that the settings of these parameters do not create hazards of injury or equipment damage.

Catalog Number Explanation

Position	1-3	4	5-7	8	9	10	11	12	13	14	15	16	17
	20D	D	2P1	A	0	E	Y	N	A	N	A	N	E
	a	b	c	d	e	f	g	h	i	j	k	l	m

a

Drive	
Code	Type
20D	PowerFlex 700S

b

Voltage Rating			
Code	Voltage	Ph.	Prechg.
B §	240V ac	3	—
C §	400V ac	3	—
D §	480V ac	3	—
E ♣ §	600V ac	3	—
F ⌘	690V ac	3	—
H ⌘	540V dc	—	N
J ⌘	650V dc	—	N
K ⌘	810V dc	—	N
M ⌘	932V dc	—	N
N ➢	325V dc	—	Y
P ➢	540V dc	—	Y
R ➢	650V dc	—	Y
T ➢	810V dc	—	Y
W ➢	932V dc	—	Y

♣ Note: CE Certification testing has not been performed on 600V class drives.

➢ Frames 5 & 6 Only.

⌘ Frames 5 & up.

§ For DC input on Frames 1…4, use the corresponding AC input code B, C, D, or E.

c1

ND Rating			
208/240V, 60Hz Input			
Code	208V Amps	240V Amps	Hp
4P2	4.8	4.2	1.0
6P8	7.8	6.8	2.0
9P6	11	9.6	3.0
015	17.5	15.3	5.0
022	25.3	22	7.5
028	32.2	28	10
042	48.3	42	15
052	56	52	20
070	78.2	70	25
080	92	80	30
104	120	104	40
130	130	130	50
154	177	154	60
192	221	192	75
260	260	260	100

c2

ND Rating		
400V, 50 Hz Input		
Code	Amps	kW
2P1	2.1	0.75
3P5	3.5	1.5
5P0	5.0	2.2
8P7	8.7	4.0
011	11.5	5.5
015	15.4	7.5
022	22	11
030	30	15
037	37	18.5
043	43	22
056	56	30
072	72	37
085	85	45
105	105	55
125	125	55
170	170	90
205	205	110
260	260	132
261	261	132
300	300	160
385	385	200
460	460	250
500	500	250
590	590	315
650	650	355
730	730	400
820 ♠	820	450
920 ♠	920	500
1K0 ♠	1030	560

♠ Release pending at date of printing. Verify before ordering.

c3

ND Rating		
480V, 60 Hz Input		
Code	Amps	Hp
2P1	2.1	1.0
3P4	3.4	2.0
5P0	5	3.0
8P0	8	5.0
011	11	7.5
014	14	10
022	22	15
027	27	20
034	34	25
040	40	30
052	52	40
065	65	50
077	77	60
096	96	75
125	125	100
156	156	125
180	180	150
248	248	200
261	261	200
300	300	250
385	385	300
460	460	350
500	500	450
590	590	500
650	650	500
730	730	600
820 ♠	820	700
920 ♠	920	800
1K0 ♠	1030	900

♠ Release pending at date of printing. Verify before ordering.

Catalog Number Explanation, Cont'd

c4

ND Rating		
600V, 60Hz Input ♣		
Code	Amps	Hp
1P7	1.7	1
2P7	2.7	2
3P9	3.9	3
6P1	6.1	5
9P0	9	7.5
011	11	10
017	17	15
022	22	20
027	27	25
032	32	30
041	41	40
052	52	50
062	62	60
077	77	75
099	99	100
125	125	125
144	144	150
170	170	150
208	208	200
261	261	250
325	325	350
385	385	400
416	416	450
460 ♠	460	450
502 ♠	502	500
590 ♠	590	600
650 ♠	650	700
750 ♠	750	800
820 ♠	820	900

♣ CE Certification testing has not been performed on 600V class drives.

♠ Release pending at date of printing. Verify before ordering.

d

Enclosure	
Code	Enclosure
A	IP20, NEMA Type 1
N ✦	Open/IP00
F ⌘	IP54, NEMA Type 12

✦ Frames 9 & up Only.

⌘ Frames 5 & 6 pending.

e

HIM	
Code	Operator Interface
0	Blank Cover
2	Digital LCD
3	Full Numeric LCD
5	Prog. Only LCD
C	Full Numeric LCD, Door Mount ❄

❄ Frames 10 & up only.

c5

ND Rating		
690V, 50 Hz Input ♣		
Code	Amps	Hp
052	52	45
060	60	55
082	82	75
098	98	90
119	119	110
142	142	132
170	170	160
208	208	200
261	261	250
325	325	315
385	385	355
416	416	400
460 ♠	460	450
502 ♠	502	500
590 ♠	590	560
650 ♠	650	630
750 ♠	750	710
820 ♠	820	800

♣ CE Certification testing has not been performed on 600V class drives.

♠ Release pending at date of printing. Verify before ordering.

f

Documentation	
Code	Documents
E	Quick Start Guide
N	No Documentation

g

Brake	
Code	w/Brake IGBT ‡
Y	Yes
N	N o

‡ Brake IGBT is standard on Frames 1-3 and optional on Frames 4-9 ONLY.

h

Brake Resistor	
Code	w/Resistor
Y	Yes ✶
N	N o

✶ Not available for Frame 3 drives or larger.

i

Emission		
Code	CE Filter	CM Choke
A ❖	Yes	Yes
B ➢	Yes	No
N §	No	No

❖ Frames 1-6 Only.

➢ Frames 9 & up Only.

§ For use on ungrounded distribution systems (Frame 9 drives only).

j

Comm Slot	
Code	Version
N	None
C	DPI ControlNet (Coax)
D	DPI DeviceNet
E	DPI EtherNet/IP
Q	DPI ControlNet (Fiber)
R	DPI RIO
S	DPI RS-485 DF1
1	DriveLogix ControlNet (Coax)
2	DriveLogix ControlNet Redundant (Coax)
3	DriveLogix ControlNet (Fiber)
4	DriveLogix ControlNet Redundant (Fiber)
5	DriveLogix DeviceNet (Open Conn.)
6	DriveLogix EtherNet/IP

k

Control Options				
Code	Control Option	Logic Expansion	Synch -Link	Cassette
A	Phase II	No	No	Expanded
B	Phase II	No	Yes	Expanded
C	Phase II	Yes	No	Expanded
D	Phase II	Yes	Yes	Expanded
G	Phase II	N/A	No	Slim
H	Phase II	N/A	Yes	Slim

l

Feedback	
Code	Option
N	None
A ❖	Resolver
B ❖	Stegman Hi-Resolution Encoder
C ❖	Multi-Device Interface
E ❖	2nd Encoder
S ❖	Safe-Off (w/2nd Encoder)

❖ Expanded cassette required.

m

Additional Config.	
Code	Description
E	Phase II Control
K	Phase II DriveLogix5730
L	Phase II DriveLogix5730 w/EtherNet/IP

Installation/Wiring

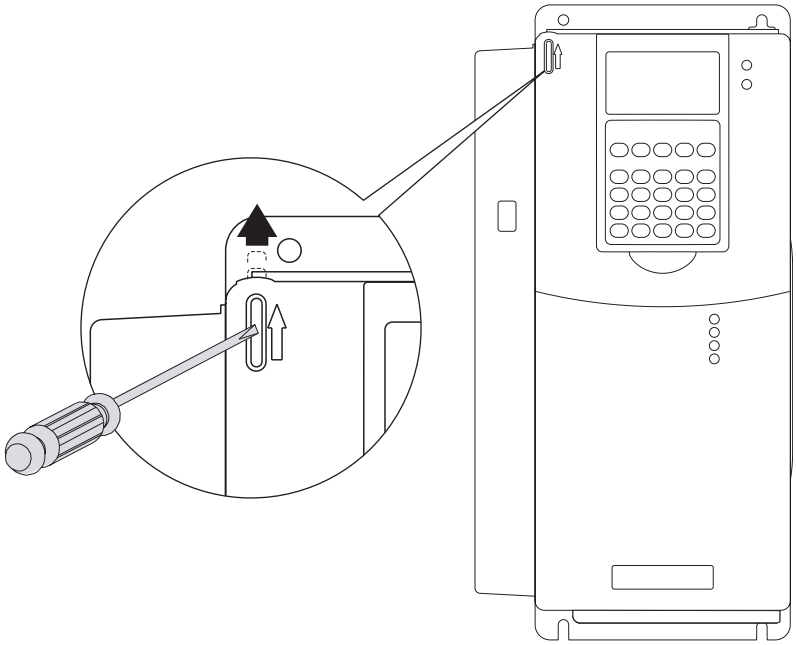
Chapter Objectives

This chapter provides the information needed to mount and wire PowerFlex® 700S AC drives, frames 1 - 6. For installation instructions for PowerFlex 700S AC drives frames 9 - 12, refer to publication PFLEX-IN006.

Since most start-up difficulties are the result of incorrect wiring, take every precaution to assure the wiring is correct. Read and understand all items in this chapter before beginning installation.

ATTENTION: The following information is merely a guide for proper installation. The Allen-Bradley Company cannot assume responsibility for the compliance or the noncompliance to any code, national, local or otherwise for the proper installation of this drive or associated equipment. A hazard of personal injury and/or equipment damage exists if codes are ignored during installation.

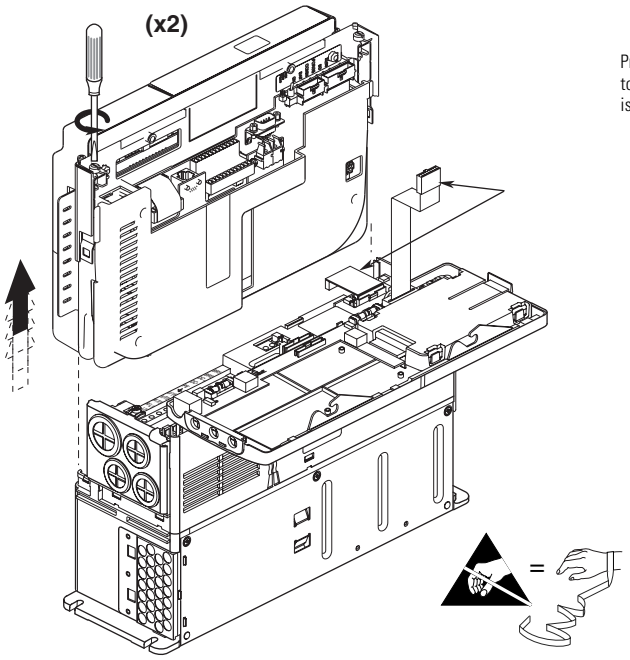
Opening the Cover



Frames 1-4
Locate the slot in the upper left corner. Slide the locking tab up and swing the cover open. Special hinges allow cover to move away from drive and lay on top of adjacent drive (if present).

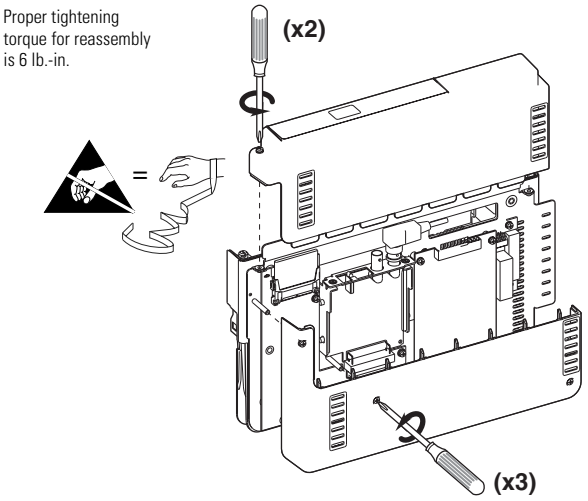
Frame 5
Slide the locking tab up, loosen the right-hand cover screw and remove.

Frame 6
Loosen 2 screws at bottom of drive cover. Carefully slide bottom cover down & out. Loosen the 2 screws at top of cover and remove.



Removing the Cassette

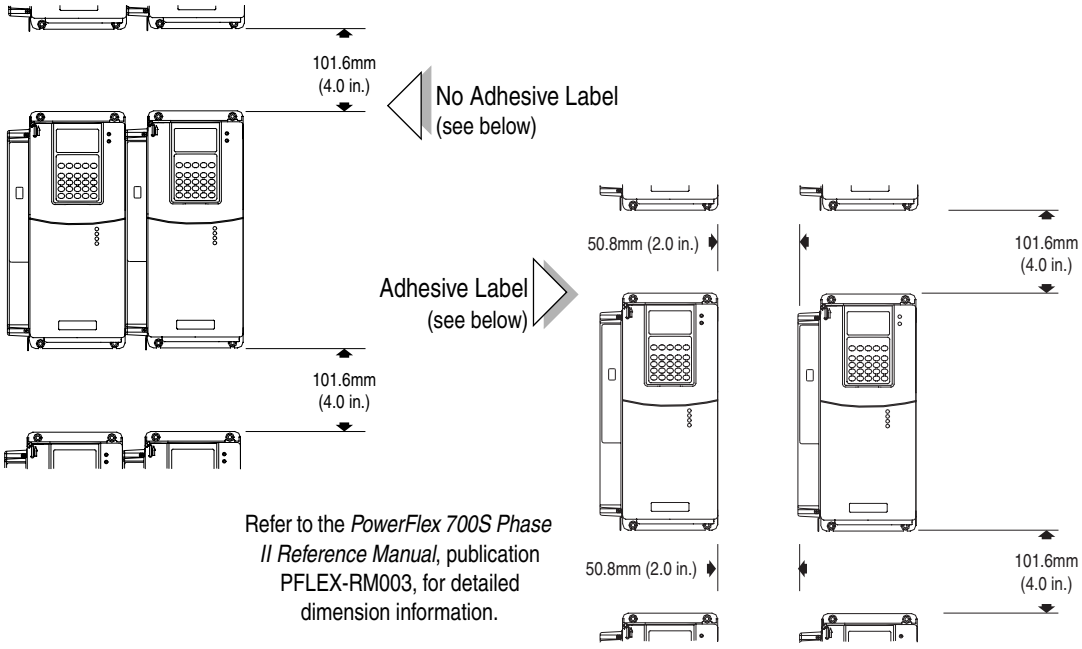
Task	Description
A	Open the door of the power structure and disconnect the cables that connect to the main board
B	Loosen screws on face of cassette
C	Remove the cassette



Removing the Side Covers

Task	Description
A	Loosen screws on face of front cover and remove the cover
B	Loosen screws on side of rear cover and remove the cover

Mounting Clearances



Refer to the *PowerFlex 700S Phase II Reference Manual*, publication PFLEX-RM003, for detailed dimension information.

Operating Temperatures

PowerFlex 700S drives are designed to operate in surrounding air temperature of 0° to 40° C. To operate the drive in installations with surrounding air temperature between 41° and 50° C, remove the adhesive label affixed to the top of the drive enclosure.

Table 1.A Acceptable Surrounding Air Temperature & Required Actions

	Required Action . . .		
	IP 20, NEMA Type 1	**IP 20, NEMA Type Open**	**IP 00, NEMA Type Open**
Drive Catalog Number	*No Action Required*	*Remove Top Label*	*Remove Top Label & Vent Plate*(1) (2)
All *Except* 20DC072	40° C	50° C	NA
20DC072	40° C	45° C	50° C

(1) To remove vent plate (see page A-27 for location), lift top edge of plate from the chassis. Rotate the plate out from the back plate.

(2) Frame 9 & up Only.

Important: Removing the adhesive label from the drive changes the NEMA enclosure rating from Type 1 to Open type.

AC Supply Source Considerations

PowerFlex drives are suitable for use on a circuit capable of delivering up to a maximum of 200,000 rms symmetrical amperes, 600 volts with recommended fuses/circuit breakers. Refer to the *PowerFlex Reference Manual - Phase II Control*, publication PFLEX-RM003, for actual interrupt ratings based on circuit breaker or fuse choice.

ATTENTION: To guard against personal injury and/or equipment damage caused by improper fusing or circuit breaker selection, use only the recommended line fuses/circuit breakers specified in Appendix A.

If a Residual Current Detector (RCD) is used as a system ground fault monitor, only Type B (adjustable) devices should be used to avoid nuisance tripping.

Unbalanced, Ungrounded or Resistive Grounded Distribution Systems

If phase to ground voltage will exceed 125% of normal or the supply system is ungrounded, refer to *Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives,* publication DRIVES-IN001, for more information.

ATTENTION: PowerFlex 700S drives contain protective MOVs and common mode capacitors that are referenced to ground. These devices must be disconnected if the drive is installed on a resistive grounded distribution system or an ungrounded distribution system. See page page 1-20 for jumper locations.

Input Power Conditioning

Certain events on the power system supplying a drive can cause component damage or shortened product life. These conditions are divided into 2 basic categories:

1. All Drives

- The power system has power factor correction capacitors switched in and out of the system, either by the user or by the power company.
- The power source has intermittent voltage spikes in excess of 6000 volts. These spikes could be caused by other equipment on the line or by events such as lightning strikes.
- The power source has frequent interruptions.

2. 5 HP or Less Drives (in addition to "1" above)

- The nearest supply transformer is larger than 100kVA or the available short circuit (fault) current is greater than 100,000A.
- The impedance in front of the drive is less than 0.5%.

If any or all of these conditions exist, it is recommended that the user install a minimum amount of impedance between the drive and the source. This impedance could come from the supply transformer itself, the cable between the transformer and drive or an additional transformer or reactor. The impedance can be calculated using the information supplied in the technical document *Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives*, publication DRIVES-IN001.

Grounding Requirements

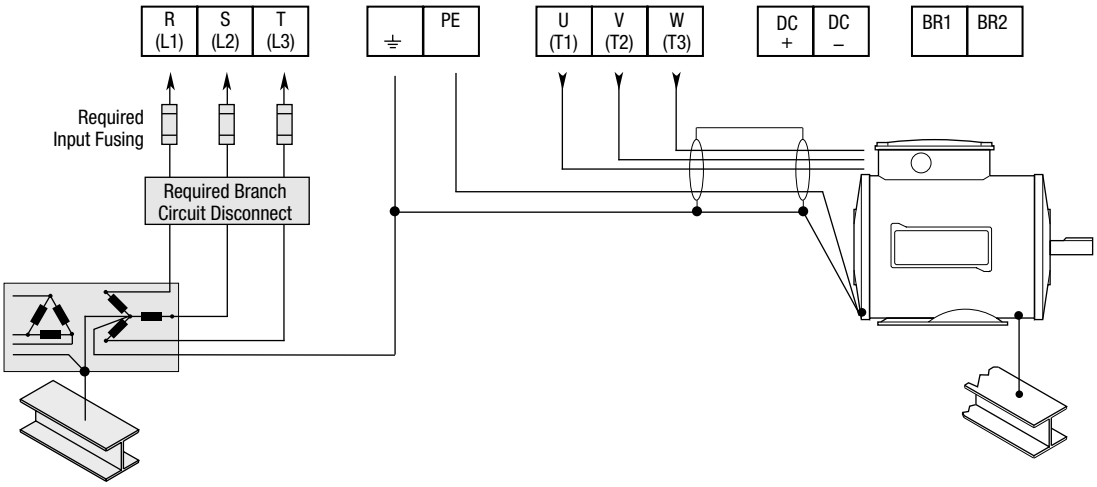
The drive Safety Ground-PE must be connected to system ground. Ground impedance must conform to the requirements of national and local industrial safety regulations and/or electrical codes. The integrity of all ground connections should be periodically checked.

Recommended Grounding Scheme

A single point (PE only) grounding scheme should be used. Some applications may require alternate grounding schemes, refer to the *Wiring and Grounding Guidelines for pulse Width Modulated (PWM) AC Drives,* publication number DRIVES-IN001, for more information. These applications include installations with long distances between drives or drive line-ups, which could cause large potential differences between the drive or line-up grounds.

For installations within a cabinet, a single safety ground point or ground bus bar connected directly to building steel should be used. All circuits including the AC input ground conductor should be grounded independently and directly to this point/bar.

Figure 1.1 Typical Grounding



Shield Termination - SHLD

The Shield terminal (see Figure 1.3 on page 1-14) provides a grounding point for the motor cable shield. It must be connected to an earth ground by a separate continuous lead. The **motor cable** shield should be connected to this terminal on the drive (drive end) and the motor frame (motor end). Use a shield terminating or EMI clamp to connect shield to this terminal.

RFI Filter Grounding

Using an optional RFI filter may result in relatively high ground leakage currents. Therefore, the **filter must only be used in installations with grounded AC supply systems and be permanently installed and solidly grounded** (bonded) to the building power distribution ground. Ensure that the incoming supply neutral is solidly connected (bonded) to the same building power distribution ground. Grounding must not rely on flexible cables and should not include any form of plug or socket that would permit inadvertent disconnection. Some local codes may require redundant ground connections. The integrity of all connections should be periodically checked. Refer to the instructions supplied with the filter.

Fuses and Circuit Breakers

The PowerFlex 700S can be installed with either input fuses or an input circuit breaker. Local/national electrical codes may determine additional requirements for these installations. Refer to Appendix A for recommended fuses/circuit breakers.

ATTENTION: The PowerFlex 700S does not provide input power short circuit protection. Specifications for the recommended fuse or circuit breaker to provide drive input power protection against short circuits are provided in Appendix A.

Power Wiring

Since most start-up difficulties are the result of incorrect wiring, take every precaution to assure the wiring is correct. Read and understand all items in this section before beginning installation.

ATTENTION: The following information is merely a guide for proper installation. The Allen-Bradley Company cannot assume responsibility for the compliance or the noncompliance to any code, national, local or otherwise for the proper installation of this drive or associated equipment. A hazard of personal injury and/or equipment damage exists if codes are ignored during installation.

Power Cable Types Acceptable for 200-600 Volt Installations

ATTENTION: National Codes and standards (NEC, BSI etc.) and local codes outline provisions for safely installing electrical equipment. Installation must comply with specifications regarding wire types, conductor sizes, branch circuit protection and disconnect devices. Failure to do so may result in personal injury and/or equipment damage.

General

A variety of cable types are acceptable for drive installations. For many installations, unshielded cable is adequate, provided it can be separated from sensitive circuits. As an approximate guide, allow a spacing of 0.3 meters (1 foot) for every 10 meters (32.8 feet) of length. In all cases, long parallel runs must be avoided. Do not use cable with an insulation thickness less than or equal to 15 mils (0.4mm/0.015 in.). Use copper wire only. Wire gauge requirements and recommendations are based on 75° C. Do not reduce wire gauge when using higher temperature wire.

Table 1.B Recommended Cable Design

Type	Max. Wire Size	Where Used	Rating/Type	Description
Type 1	2 AWG	Standard Installations 100 HP or less	600V, 90°C (194°F) XHHW2/RHW-2	Four tinned copper conductors with XLPE insulation
Type 2	2 AWG	Standard Installations 100 HP or less with Brake Conductors	600V, 90°C (194°F) RHH/RHW-2	Four tinned copper conductors with XLPE insulation plus one (1) shielded pair of brake conductors.
Type 3	500 MCM AWG	Standard Installations 150 HP or more	Tray rated 600V, 90°C (194°F) RHH/RHW-2	Three tinned copper conductors with XLPE insulation and (3) bare copper grounds and PVC jacket.
Type 4	500 MCM AWG	Water, Caustic Chemical, Crush Resistance	Tray rated 600V, 90°C (194°F) RHH/RHW-2	Three bare copper conductors with XLPE insulation and three copper grounds on #10 AWG and smaller. Acceptable in Class I & II, Division I & II locations.
Type 5	500 MCM AWG	690V Applications	Tray rated 2000V, 90°C (194°F)	Three tinned copper conductors with XLPE insulation. (3) bare copper grounds and PVC jacket. **Note**: If terminator network or output filter is used, connector insulation must be XLPE, not PVC.

Unshielded

THHN, THWN or similar wire is acceptable for drive installation in dry environments provided adequate free air space and/or conduit fill rates

limits are provided. **Do not use THHN or similarly coated wire in wet areas**. Any wire chosen must have a minimum insulation thickness of 15 Mils and should not have large variations in insulation concentricity.

Shielded/Armored Cable

Shielded cable contains all of the general benefits of multi-conductor cable with the added benefit of a copper braided shield that can contain much of the noise generated by a typical AC Drive. Strong consideration for shielded cable should be given in installations with sensitive equipment such as weigh scales, capacitive proximity switches and other devices that may be affected by electrical noise in the distribution system. Applications with large numbers of drives in a similar location, imposed EMC regulations or a high degree of communications/networking are also good candidates for shielded cable.

Shielded cable may also help reduce shaft voltage and induced bearing currents for some applications. In addition, the increased impedance of shielded cable may help extend the distance the motor can be located from the drive without the addition of motor protective devices such as terminator networks. Refer to “Reflected Wave” in *Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives*, publication DRIVES-IN001.

Consideration should be given to all of the general specifications dictated by the environment of the installation, including temperature, flexibility, moisture characteristics and chemical resistance. In addition, a braided shield should be included and specified by the cable manufacturer as having coverage of at least 75%. An additional foil shield can be greatly improve noise containment.

A good example of recommended cable is Belden® 295xx (xx determines gauge). This cable has 4 XLPE insulated conductors with a 100% coverage foil and an 85% coverage copper braided shield (with drain wire) surrounded by a PVC jacket.

Other types of shielded cable are available, but the selection of these types may limit the allowable cable length. Particularly, some of the newer cables twist 4 conductors of THHN wire and wrap them tightly with a foil shield. This construction can greatly increase the cable charging current required and reduce the overall drive performance. Unless specified in the individual distance tables as tested with the drive, these cables are not recommended and their performance against the lead length limits supplied is not known.

EMC Compliance

Refer to CE Conformity on page 1-29 for details.

Cable Trays and Conduit

If cable trays or large conduits are to be used, refer to guidelines presented in the *Grounding and Wiring Guidelines for Pulse Width Modulated (PWM) AC Drives*.

ATTENTION: To avoid a possible shock hazard caused by induced voltages, unused wires in the conduit must be grounded at both ends. For the same reason, if a drive sharing a conduit is being serviced or installed, all drives using this conduit should be disabled. This will help minimize the possible shock hazard from "cross coupled" motor leads.

Motor Cable Lengths

Typically, motor lead lengths less than 30 meters (100 feet) are acceptable. Motor lead lengths of 30 meters (100 feet) to 246 meters (800 feet) require shielded cable. If your application dictates longer lengths, refer to publication 20D-TD002, *Technical Data - PowerFlex 700S Drives - Phase II Control*, for details.

Power Terminal Block

Figure 1.3 shows the typical location of the Power Terminal Block in Frame 1 drives. The terminal block is located in the bottom section of the drive on Frame 2-5 drives.

Cable Entry Plate Removal

If additional wiring access is needed, the Cable Entry Plate on Frame 1-3 drives can be removed. Simply loosen the screws securing the plate to the chassis. The slotted mounting holes assure easy removal.

Important: Removing the Cable Entry Plate limits the maximum surrounding air temperature to 40° C (104° F).

Power Wiring Access Panel Removal

Frame	Removal Procedure *(Replace when wiring is complete)*
1, 2 & 6	Part of front cover, see page 1-2.
3	Open front cover and gently tap/slide cover down and out.
4	Loosen the 4 screws and remove.
5	Remove front cover (see page 1-2), gently tap/slide panel up and out.

Access Panel Removal

Frame 3 drives utilize a panel/cover over the power wiring terminals. To remove, simply slide it down and out.

Replace the cover when wiring is complete.

ATTENTION: Removing the access panel/cover exposes dangerous voltages on the terminals and negates the enclosure type rating. Replace the access panel/cover when service is complete. Failure to comply may result in personal injury or equipment damage.

AC Input Phase Selection (Frames 5 & 6 Only)

ATTENTION: To avoid a shock hazard, ensure that all power to the drive has been removed before performing the following.

Moving the "Line Type" jumper shown in Figure 1.2 will select single or three-phase operation. Remove plastic guard to access jumper.

Important: When selecting single-phase operation, input power must be applied to the R (L1) and S (L2) terminals only.

Precharge - Common Bus (High Power Only)

AC drives have internal precharge. Frame 9 & higher DC fed drives require external precharge consisting of precharge contactors and current limiting resistors. Refer to Table 1.C for contactor and resistor values.

Table 1.C Precharge Resistor Values

Frame	Precharge Contactor	Precharge Resistor Series
9	318 A or greater	(2) 15 Ω 240 W

Cooling Fan Voltage

Common Bus drives require user supplied 120 or 240V AC to power the cooling fans. Power source is connected between "0V AC" and the terminal corresponding to your source voltage (see on page 1-16).

Table 1.D Fan VA Rating

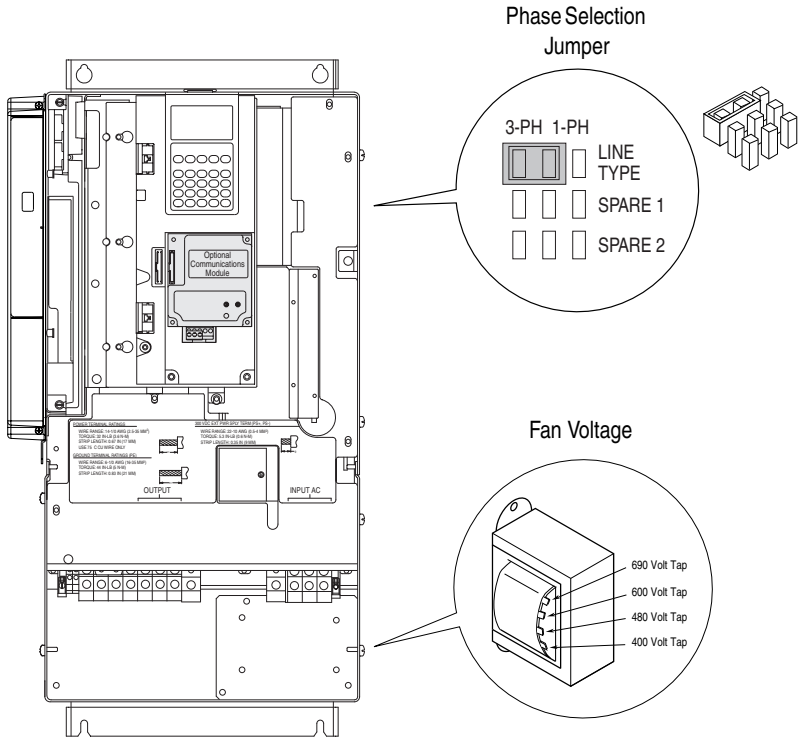
Frame	Fan Voltage*(120V or 240V)*
5	100 VA
6	138 VA

Selecting/Verifying Fan Voltage (Frames 5 & 6 Only)

ATTENTION: To avoid a shock hazard, ensure that all power to the drive has been removed before performing the following.

Frames 5 & 6 utilize a transformer to match the input line voltage to the internal fan voltage. If your line voltage is different than the voltage class specified on the drive nameplate, it may be necessary to change the transformer taps. The taps are shown in the insert of frame 5 below.

Figure 1.2 Frames 5 & 6 Jumper and Transformer Locations (Frame 5 shown)



Frame 6 Transformer Tap Access

The transformer is located behind the Power Terminal Block in the area shown in Figure 1.2. Gain access by releasing the terminal block from the rail. To release terminal block and change tap:

1. Locate the small metal tab at the bottom of the end block.
2. Press the tab in and pull the top of the block out. Repeat for next block if desired.
3. Select appropriate transformer tap.
4. Replace block(s) in reverse order.

Important Common Bus (DC Input) Application Notes

1. If drives without internal precharge are used (Frames 5 & 6 only), then:
   - **a)** precharge capability must be provided in the system to guard against possible damage, and
   - **b)** disconnect switches Must Not be used between the input of the drive and a common DC bus without the use of an external precharge device.
2. If drives with internal precharge (Frames 1-6) are used with a disconnect switch to the common bus, then:
3. an auxiliary contact on the disconnect must be connected to a digital input of the drive. The corresponding input (parameter 825-830) must be set to "Precharge Enable." This provides the proper precharge interlock, guarding against possible damage to the drive when connected to a common DC bus.

Table 1.E Power Terminal Block Specifications

No.	Name	Frame	Description	Wire Size Range[1]		Torque		Terminal Bolt Size[2]
				Maximum	Minimum	Maximum	Recommended	
❶	Power Terminal Block	1	All power terminals	4.0 mm^2 (10 AWG)	0.5 mm^2 (22 AWG)	1.7 N-m (15 lb.-in.)	0.8 N-m (7 lb.-in.)	—
		2	All power terminals	10.0 mm^2 (6 AWG)	0.8 mm^2 (18 AWG)	1.7 N-m (15 lb.-in.)	1.4 N-m (12 lb.-in.)	—
		3	All power terminals	25.0 mm^2 (3 AWG)	2.5 mm^2 (14 AWG)	3.6 N-m (32 lb.-in.)	1.8 N-m (16 lb.-in.)	—
			All power terminals	10.0 mm^2 (6 AWG)	0.8 mm^2 (18 AWG)	1.7 N-m (15 lb.-in.)	1.4 N-m (12 lb.-in.)	—
		4	All power terminals	35.0 mm^2 (1/0 AWG)	10 mm^2 (8 AWG)	4.0 N-m (24 lb.-in.)	4.0 N-m (24 lb.-in.)	—
		5 (75 HP)[3]	R, S, T, BR1, 2, DC+, DC-, U, V and W	50.0 mm^2 (1/0 AWG)	2.5 mm^2 (14 AWG)	See Note [4]	See Note [3]	—
			PE	50.0 mm^2 (1/0 AWG)	4.0 mm^2 (12 AWG)			—
		5 (100 HP)[3]	R, S, T, DC+, DC-, U, V and W	70.0 mm^2 (2/0 AWG)	16.0 mm^2 (6 AWG)			—
			BR1, 2	50.0 mm^2 (1/0 AWG)	2.5 mm^2 (14 AWG)			—
			PE	50.0 mm^2 (1/0 AWG)	4.0 mm^2 (12 AWG)			—
		6	All power terminals	120.0 mm^2 (4/0 AWG)	2.5 mm^2 (14 AWG)	6 N-m (52 lb.-in.)	6 N-m (52 lb.-in.)	—
❷	SHLD Terminal	1-6	Terminating point for wiring shields	—	—	1.6 N-m (14 lb.-in.)	1.6 N-m (14 lb.-in.)	M12

No.	Name	Frame	Description	Wire Size Range[1]		Torque		Terminal Bolt Size[2]
				Maximum	Minimum	Maximum	Recommended	
❸	AUX Terminal Block	1-4	Auxiliary Control Voltage[5] PS+, PS-	1.5 mm^2 (16 AWG)	0.2 mm^2 (24 AWG)	—	—	—
		5-6		4.0 mm^2 (10 AWG)	0.5 mm^2 (22 AWG)	0.6 N-m (5.3 lb.-in.)	0.6 N-m (5.3 lb.-in.)	—
❹	Fan Terminal Block (Common Bus Only)	5-6	User Supplied Fan Voltage 0V AC, 120V AC, 240V AC	4.0 mm^2 (10 AWG)	0.5 mm^2 (22 AWG)	0.6 N-m (5.3 lb.-in.)	0.6 N-m (5.3 lb.-in.)	M10

(1) Maximum/minimum sizes that the terminal block will accept - these are not recommendations.

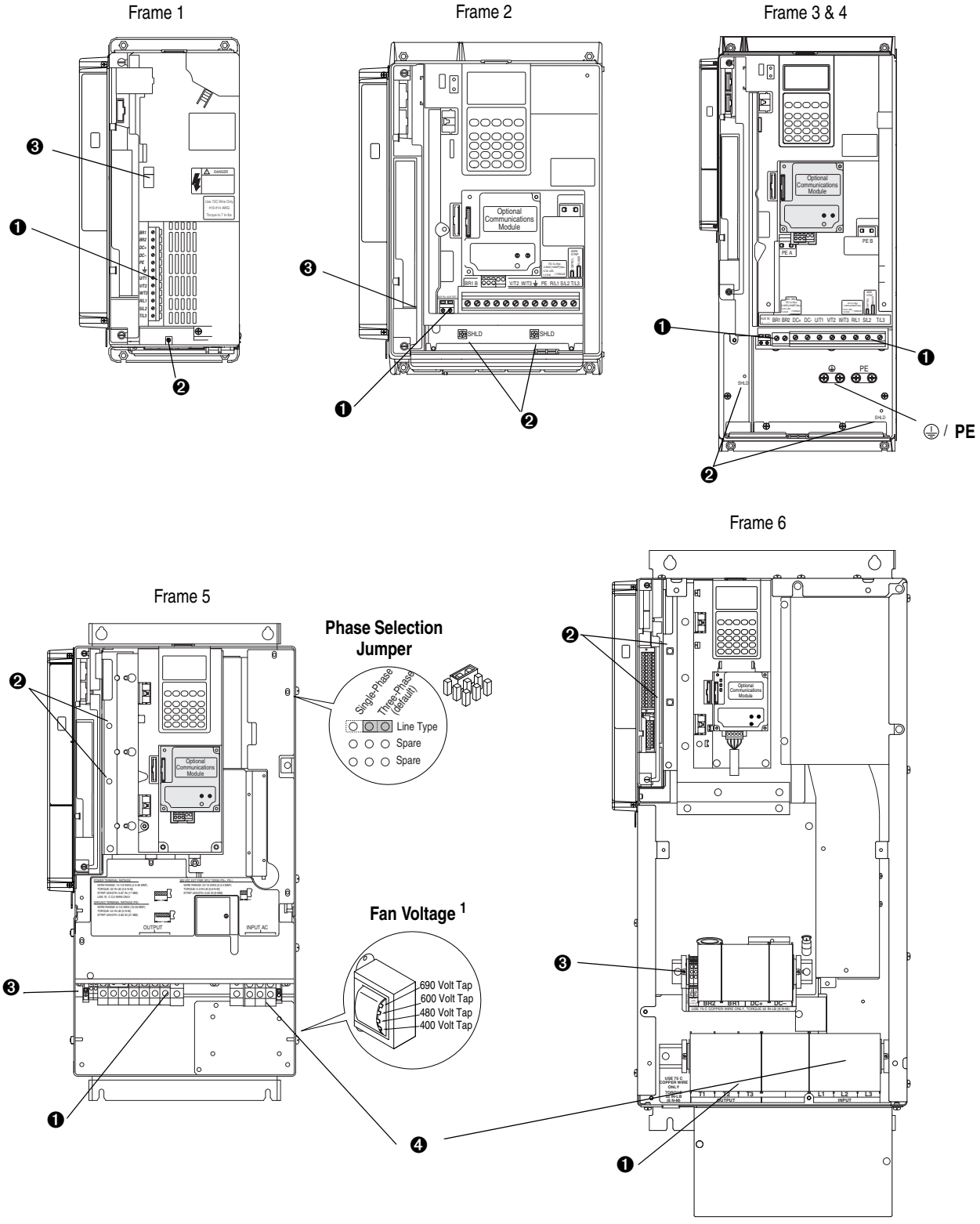
(2) Apply counter torque to the nut on the other side of terminations when tightening or loosening the terminal bolt in order to avoid damage to the terminal.

(3) Not all terminals present on all drives.

(4) Refer to the terminal block label inside the drive.

(5) Auxiliary power:
UL Installation - 300V DC, ±10%, Non UL Installation - 270-600V DC, ±10%.
Frame 1-6, 100 W

Figure 1.3 Typical Power Terminal Block Location

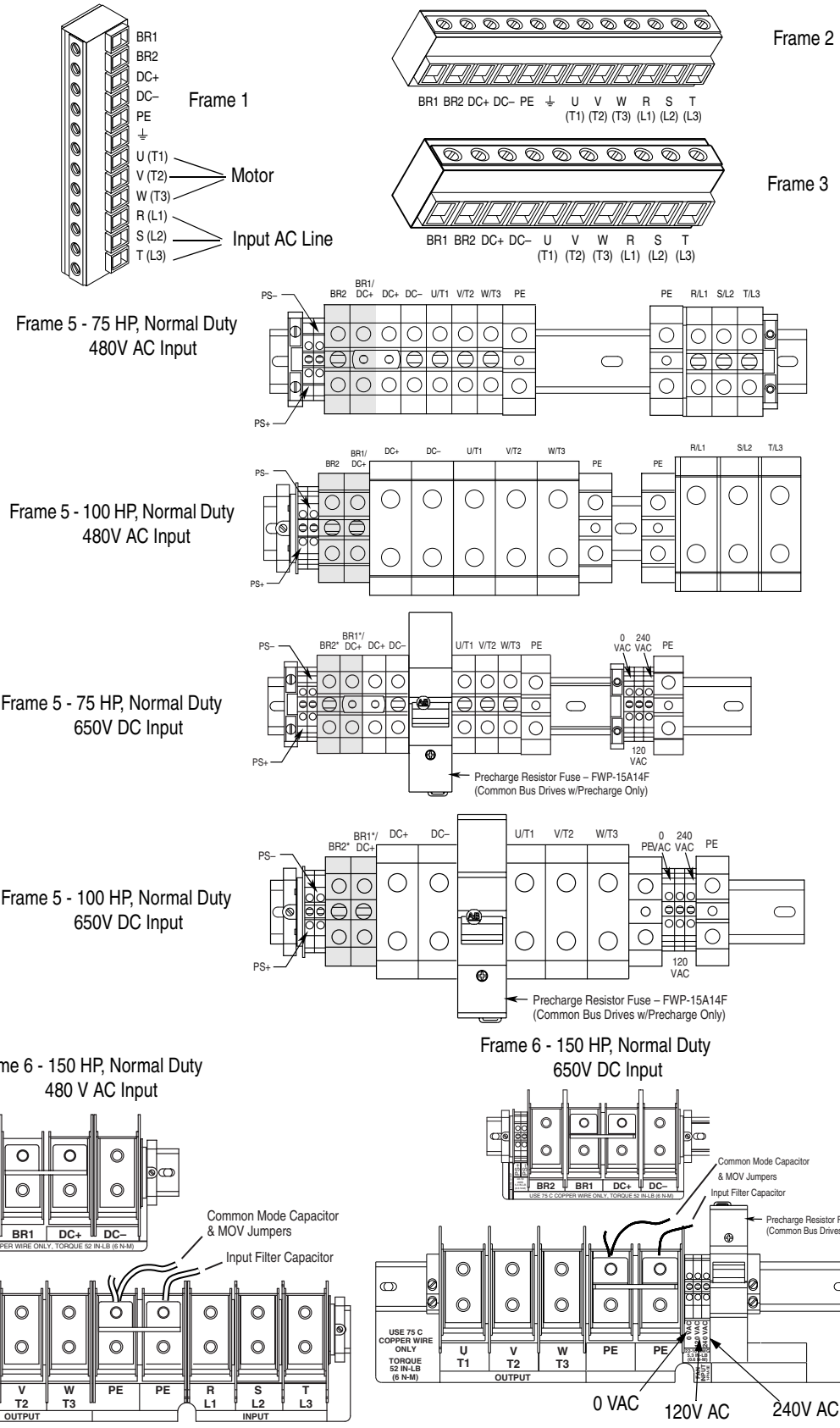


[1] Frame 5 & 6 utilize a transformer to match the input line voltage to the internal fan voltage. If you line voltage is different then the voltage class specified on the drive nameplate, it may be necessary to change the transformer taps. The taps are shown in the inserts of frames 5 & 6.
Common Bus drives require user supplied 120V or 240V to power the cooling fans. Power source is connected between "0V AC" and the terminal corresponding to your source voltage.

Fan VA Rating - Common Bus Only

Frame	Fan Voltage *(120V or 240V)*
5	100 VA
6	138 VA

Figure 1.4 Power Terminal Block



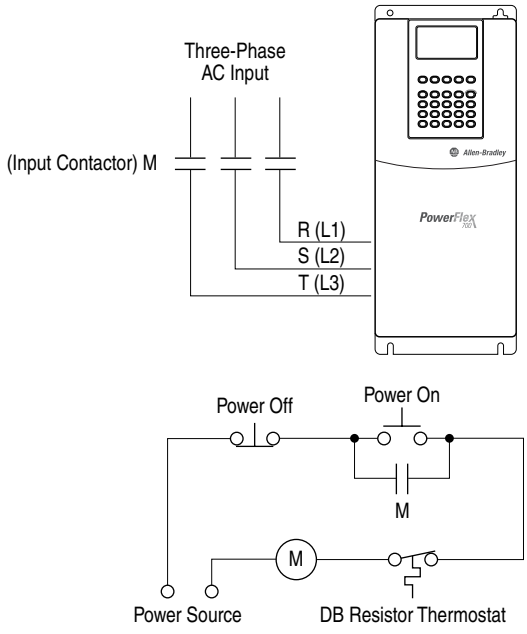
Shaded terminals (BR1 & BR2) will only be present on drives ordered with the Brake Option.

Terminal	Description	Notes
BR1	DC Brake (+)	Dynamic Brake Resistor Connection (+)
BR2	DC Brake (–)	Dynamic Brake Resistor Connection (–)
DC+	DC Bus (+)	DC Input Power or Dynamic Brake Chopper
DC–	DC Bus (–)	DC Input Power or Dynamic Brake Chopper
PE	PE Ground	Refer to Figure 1.5 on page 20 for location on 3 Frame drives
⏚	Motor Ground	Refer to Figure 1.5 on page 20 for location on 3 Frame drives
U	U (T1)	To motor
V	V (T2)	To motor
W	W (T3)	To motor
R	R (L1)	AC Line Input Power
S	S (L2)	AC Line Input Power
T	T (L3)	AC Line Input Power

Dynamic Brake Resistor Considerations

ATTENTION: The drive does not offer protection for externally mounted brake resistors. A risk of fire exists if external braking resistors are not protected. External resistor packages must be self-protected from over temperature or a circuit equivalent to the one shown below must be supplied.

Figure 1.1 External Brake Resistor Circuitry



Using Input/Output Contactors

ATTENTION: A contactor or other device that routinely disconnects and reapplies the AC line to the drive to start and stop the motor can cause drive hardware damage. The drive is designed to use control input signals that will start and stop the motor. If an input device is used occasionally, an auxiliary contact on that device should also be wired to a digital input programmed as a "Enable" function. The input device must not exceed one operation per minute or drive damage will occur.

ATTENTION: The drive start/stop control circuitry includes solidstate components. If hazards due to accidental contact with moving machinery or unintentional flow of liquid, gas or solids exist, an additional hardwired stop circuit may be required to remove the AC line to the drive. When the AC line is removed, there will be a loss of any inherent regenerative braking effect that might be present - the motor will coast to a stop. An auxiliary braking method may be required.

ATTENTION: To guard against drive damage when using output contactors, the following information must be read and understood. One or more output contactors may be installed between the drive and motor(s) for the purpose of disconnecting or isolating certain motors/loads. If a contactor is opened while the drive is operating, power will be removed from the respective motor, but the drive will continue to produce voltage at the output terminals. In addition, reconnecting a motor to an active drive (by closing the contactor) could produce excessive current that may cause the drive to fault. If any of these conditions are determined to be undesirable or unsafe, an auxiliary contact on the output contactor should be wired to a drive digital input that is programmed as "Enable." This will cause the drive to execute a coast-to-stop (cease output) whenever an output contactor is opened.

Using PowerFlex® 700S Drives with Regenerative Power Units

If a Regenerative unit (i.e., 1336 REGEN) is used as a bus supply or a brake, the common mode capacitors should be disconnected (see Table 1.F on page 1-18).

Regenerative Unit to Drive Connections

Regenerative Brake Mode

	Terminals	
Frame(s)	1336 REGEN	PowerFlex 700S
1- 4	DC+ & DC-	BR1 &DC-
5 & 6	DC+ & DC-	DC+ & DC-

Regenerative Bus Supply Mode

	Terminals	
Frame(s)	1336 REGEN	PowerFlex 700S
1 - 4	DC+ & DC-	DC+ & DC-
5 & 6	DC+ & DC-	DC+ & DC- of the Common Bus Drives

Disconnecting MOVs and Common Mode Capacitors

PowerFlex 700S drives contain protective MOVs and common mode capacitors that are referenced to ground. To guard against drive damage, these devices must be disconnected if the drive is installed on a resistive grounded distribution system or an ungrounded distribution system where the line-to-ground voltages on any phase could exceed 125% of the nominal line-to-line voltage. To disconnect these devices, remove the jumper(s) listed in Table 1.F. Jumpers can be removed by carefully pulling the jumper straight out. See the *Grounding and Wiring Guidelines for PWM AC Drives*, publication DRIVES-IN001, for more information on ungrounded system installation.

ATTENTION: To avoid an electric shock hazard, verify that the voltage on the bus capacitors has discharged before removing/installing jumpers. Measure the DC bus voltage at the +DC & –DC terminals of the Power Terminal Block. The voltage must be zero.

Table 1.F Jumper Removal

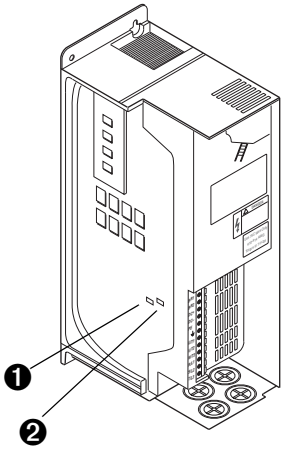
Frames	Jumper	Component	Jumper Location	No.
1	PEA	Common Mode Capacitors	Remove the Control Assembly and Cassette. Jumpers are located on the drive Power Board (see Figure 1.5).	❶
	PEB	MOV's		❷
2-4	PEA	Common Mode Capacitors	Jumpers are located above the Power Terminal Block (see Figure 1.5).	❸
	PEB	MOV's		❹
5	Wire	Common Mode Capacitors	Remove the I/O Cassette. The green/yellow jumper is located on the back of chassis in the area shown (see Figure 1.5). Disconnect, insulate and secure the wire to guard against unintentional contact with chassis or components.	❺
		MOV's Input Filter Capacitors	Note location of green/yellow jumper wire in Figure 1.5. Disconnect, insulate and secure the wire guard against unintentional contact with chassis or components.	❻

Frames	Jumper	Component	Jumper Location	No.
6	Wire	Common Mode Capacitors MOV's Input Filter Capacitors	Remove the wire guard from the Power Terminal Block. Disconnect the three green/yellow wires from the two "PE" terminals shown in Figure 1.4. Insulate and secure the wires to guard against unintentional contact with chassis or components.	Please refer to Power Terminal Blocks, Frame 6 on page 1-16.

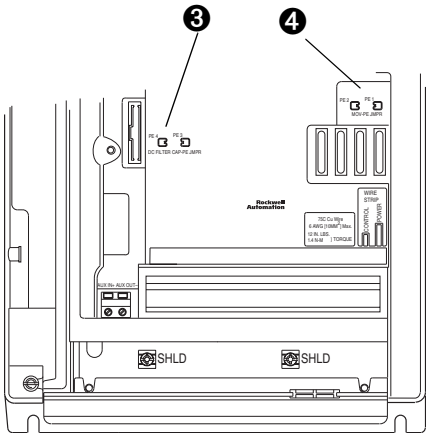
ATTENTION: The disconnecting MOV must be used on a grounded system.

Figure 1.5 Typical Jumper Locations

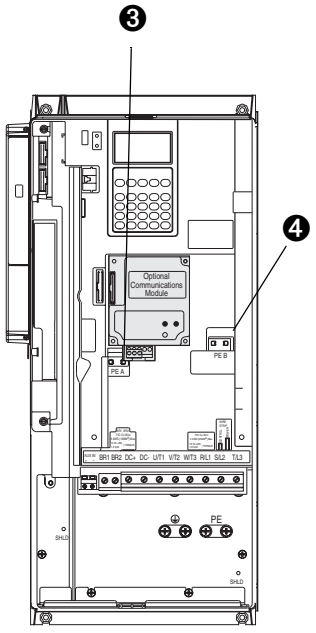
Frame 1
(Control Assembly & I/O Cassette Removed)



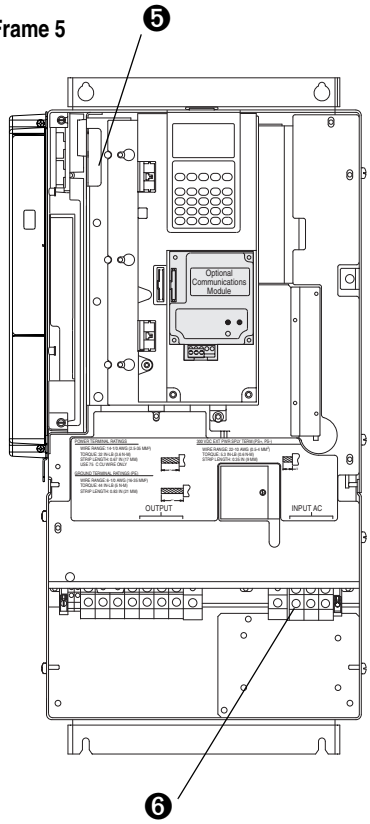
Frame 2



Frames 3 & 4



Frame 5



I/O Wiring

Important points to remember about I/O wiring:

- Always use copper wire.
- Wire with an insulation rating of 600V or greater is recommended.
- Control and signal wires should be separated from power wires by at least 0.3 meters (1 foot).
- 4100CCF3 Flex I/O cable for use with DriveLogix is 3 ft. maximum length.

Important: I/O terminals labeled "(–)" or "Common" are not referenced to earth ground and are designed to greatly reduce common mode interference. Grounding these terminals can cause signal noise.

ATTENTION: Hazard of personal injury or equipment damage exists when using bipolar input sources. Noise and drift in sensitive input circuits can cause unpredictable changes in motor speed and direction. Use speed command parameters to help reduce input source sensitivity.

Table 1.G Recommended Control Wire

Type		Wire Type(s)	Description	Insulation Rating
Digital I/O	Un-shielded	Per US NEC or applicable national or local code	–	300V, 60° C (140° F), Minimum
	Shielded	Multi-conductor shielded cable such as Belden 8770 (or equiv.)	0.750 mm^2 (18 AWG), 3 conductor, shielded.	
Standard Analog I/O	Belden 8760/9460 (or equiv.)		0.750 mm^2 (18 AWG), twisted pair, 100% shield with drain (5).	300V, 75-90 °C (167-194 °F)
Remote Pot	Belden 8770 (or equiv.)		0.750 mm^2 (18 AWG), 3 cond., shielded	
Encoder/ Pulse I/O Less 30.5 m (100 ft.)	Combined:	Belden 9730 (or equivalent) (1)	0.196 mm^2 (24 AWG), individually shielded.	
Encoder/ Pulse I/O 30.5 m (100 ft.) to 152.4 m (500 ft.)	Signal:	Belden 9730/9728 (or equivalent) (1)	0.196 mm^2 (24 AWG), individually shielded.	
	Power:	Belden 8790 (2)	0.750 mm^2 (18 AWG)	
	Combined:	Belden 9892 (3)	0.330 mm^2 or 0.500 mm^2 (3)	
Encoder/ Pulse I/O 152.4 m (500 ft.) to 259.1 m (850 ft.)	Signal:	Belden 9730/9728 (or equivalent) (1)	0.196 mm^2 (24 AWG), individually shielded.	
	Power:	Belden 8790 (2)	0.750 mm^2 (18 AWG)	
	Combined:	Belden 9773/9774 (or equivalent) (4)	0.750 mm^2 (18 AWG), individually shielded pair.	
EMC Compliance	Refer to CE Conformity on page 1-29 for details.			

(1) Belden 9730 is 3 individually shielded pairs (2 channel plus power). If 3 channel is required, use Belden 9728 (or equivalent).

(2) Belden 8790 is 1 shielded pair.

(3) Belden 9892 is 3 individually shielded pairs (3 channel), 0.33 mm^2 (22 AWG) plus 1 shielded pair 0.5 mm^2 (20 AWG) for power.

(4) Belden 9773 is 3 individually shielded pairs (2 channel plus power). If 3 channel is required, use Belden 9774 (or equivalent).

(5) If the wires are short and contained within a cabinet which has no sensitive circuits, the use of shielded wire may not be necessary, but is always recommended.

Wiring the Main Control Board I/O Terminals

Terminal blocks TB1 and TB2 contain connection points for all inputs, outputs and standard encoder connections. Both terminal blocks reside on the Main Control Board.

Remove the terminal block plug from the socket, and make connections. *Do not use a tool for terminal block removal. Damage may occur if a tool is used.*

Important: For NEMA 1 applications, all wiring must be routed through the conduit plate on the drive. Route any wires from the expanded cassette to the base cassette and out of the drive.

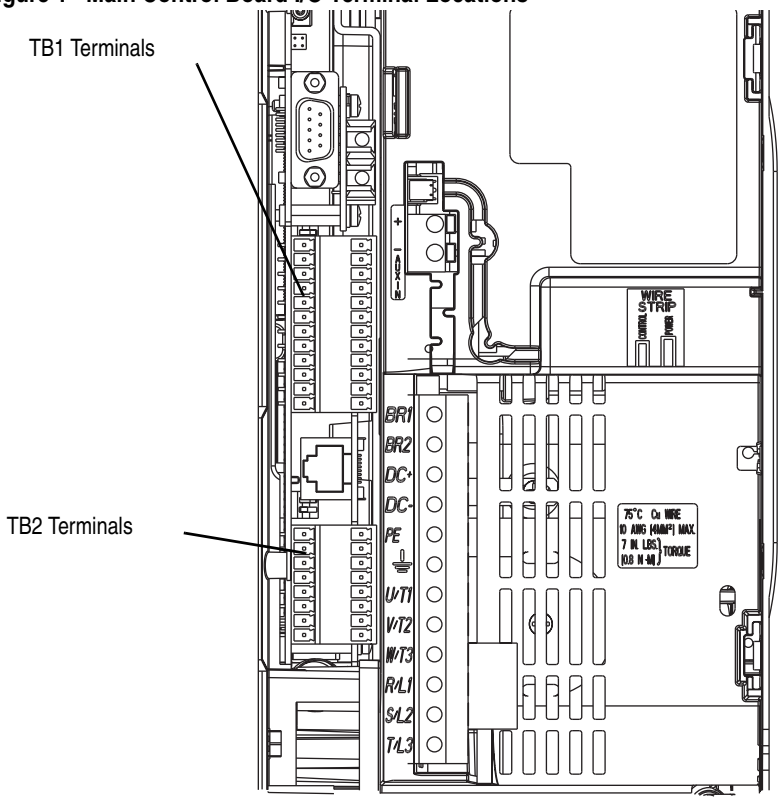
Reinstall the plug when wiring is complete. The terminal blocks have keys, which make it difficult to insert a terminal plug into the wrong socket.

Table 1.H Control & Encoder Terminal Block Specifications

			Wires Size Range[1]		Torque	
Name	**Frame**	**Description**	Maximum	Minimum	Maximum	Recommended
I/O Blocks	1-6	Signal & Encoder connections	1.5 mm^2 (16 AWG)	.14 mm^2 (28 AWG)	.25 N-m (2.2 lb.-in.)	.22 N-m (1.9 lb.-in.)

(1) Maximum/minimum sizes the terminal block will accept - these are not recommendations.

Figure 1 Main Control Board I/O Terminal Locations



Auxiliary Power Supply (High Power Only)

You may use an auxiliary power supply to keep the 700S Control Assembly energized when input power is de-energized. This allows the Main Control Board, DriveLogix controller and any feedback option cards to continue operation. See *Power Terminal Block Specifications* for connection information. You must set Par 153 [Control Options]/bit 17 [Aux Pwr Sply] to enable this feature.

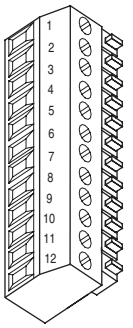
Table 1.I Auxiliary Power Supply Specifications

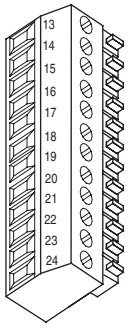
Voltage	Current (Min)	Power (Min)
24V DC ± 5%	3 A	75 W

Hard Enable Circuitry

By default, Digital Input 6 is configured for hardware Enable input. This is for applications requiring the drive to be disabled *without* software interpretation. With the "HW Enable Jumper (Shunt)" on the pins closest to the PCB, Digital Input 6 is configured as a "dedicated" hardware enable. If this configuration is not required, the "WH Enable Jumper (Shunt)" may be moved to the out board pins, making Digital Input 6 user programmable via Par 830 [Dig In 6 Sel].

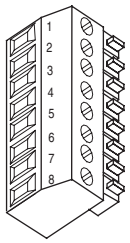
Table 1.J TB1 Terminals

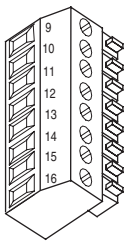




Terminal	Signal	Factory Default	Description	Related Parameter
1	Analog Input 1 Comm.	(Volt)	Bipolar, differential input, +/-10V, 0-20 mA, 13 bit + sign 20k Ohm impedance at Volt; 500 Ohm impedance at mA	
2	Analog Input 1 (+/-)			800
3	Shield	NA	Analog Input Shield	
4	Analog Input 2 Comm.	(Volt)	Bipolar, differential input, +/-10V, 0-20 mA, 13 bit + sign 20k Ohm impedance at Volt; 500 Ohm impedance at mA	
5	Analog Input 2 (+/-)			806
6	Analog Input 3 [NTC-] Comm.	(Volt)	Differential input, 0-10V, 10 bit (for motor control mode FVC2, this is the temperature adaptation input).	
7	Analog Input 3 [NTC+]			812
8	Shield	NA	Analog Output Shield	
9	Analog Output 1 (-)	(Volt)	Bipolar, differential output, +/-10V, 0-20 mA, 11 bit + sign 2k Ohm minimum load	832, 833
10	Analog Output 1 (+)			
11	Analog Output 2 (-)	(Volt)		839, 840
12	Analog Output 2 (+)			
13	+10V Reference	NA	Rating: 20 mA maximum load (Recommend 5k Ohm pot)	
14	Reference Common	NA		
15	-10V Reference	NA		
16	Encoder A	NA	Normal current draw per channel: 20 mA	230-233
17	Encoder A (Not)	NA		
18	Encoder B	NA		
19	Encoder B (Not)	NA		
20	Encoder Z	NA		
21	Encoder Z (Not)	NA		
22	Encoder Reference (+)	NA	12 or 5V DC power supply for primary encoder interface Rating: 300 mA maximum	
23	Encoder Reference (-)	NA		
24	Encoder Shield	NA	Connection point for encoder shield	

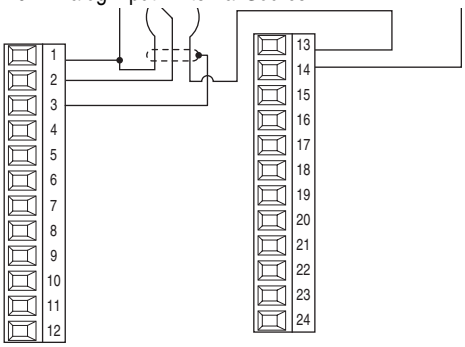
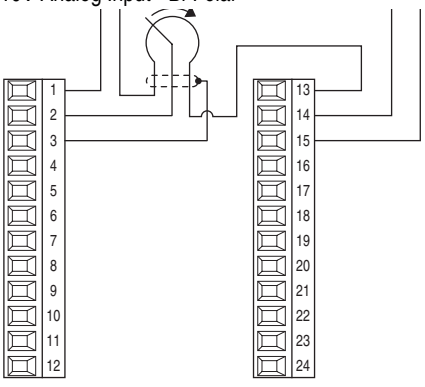
Table 1.K TB2 Terminals





Terminal	Signal	Factory Default	Description	Related Parameter
1	24V DC Common (-)	NA	Drive supplied 24V DC logic input power Rating: 300 mA maximum load	
2	24V DC Source (+)	NA		
3	Digital Output 1		24V DC Open Collector (sinking logic) Rating: Internal Source = 150 mA max. External Source = 750 mA	816, 847
4	Digital Output 1/2 Com	NA	Common for Digital Output 1 & 2	
5	Digital Output 2		24V DC Open Collector (sinking logic) Rating: Internal Source = 150 mA max. External Source = 750 mA	851, 852
6	Relay Output 3 (NC)		Relay contact output Rating: 115V AC or 24V DC = 2 A max. Inductive/Resistive	856, 857
7	Relay Output 3 Com	NA		
8	Relay Output 3 (NO)			
9	Digital Input 1-3 Com	NA	Common for Digital Inputs 1-3	
10	Digital Input 1		High speed 12-24V DC sourcing Digital Input Load:15 mA at 24V DC	825
11	Digital Input 2			826
12	Digital Input 3		Load:15 mA at 24V DC sourcing	827
13	Digital Input 4-6 Com	NA	Common for Digital Inputs 4-6	
14	Digital Input 4		Load: 10 mA at 24V DC sinking/sourcing Load: 7.5 mA at 115V AC	828
15	Digital Input 5			829
16	Digital Input 6	HW Enable		830

Table 1.L TB1 Terminals — Analog Wiring Examples

Input/Output	Connection Example	Required Parameter Changes
0-10V Analog Input	0-10V Analog Input - Internal Source 	
0-10V Analog Input	0-10V Analog Input - Bi-Polar 	

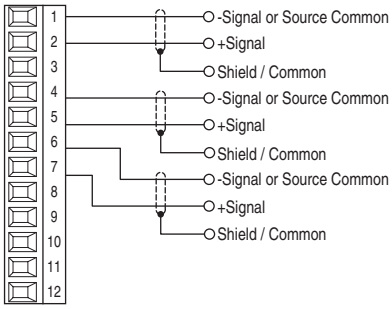
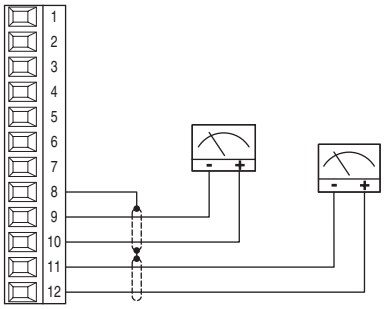
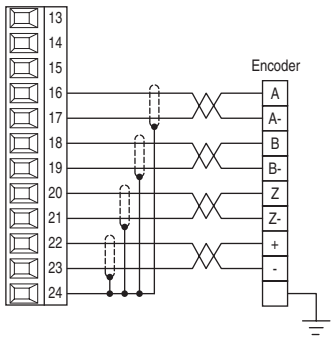
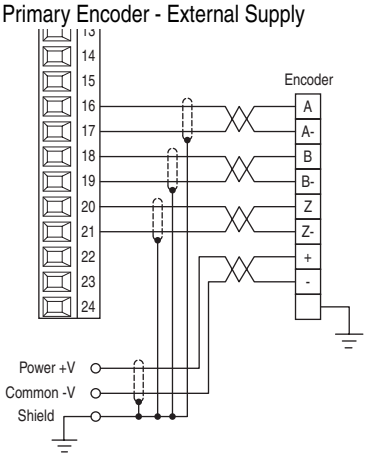
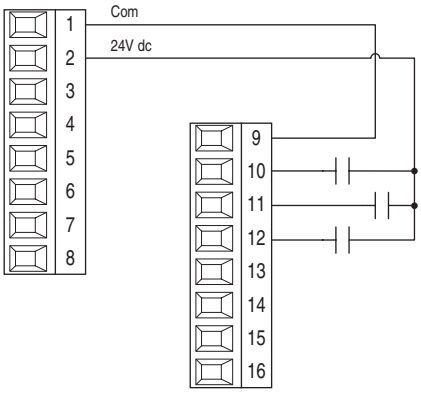
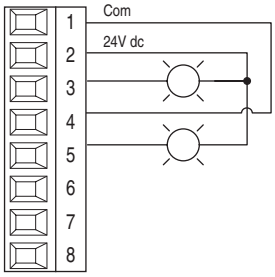
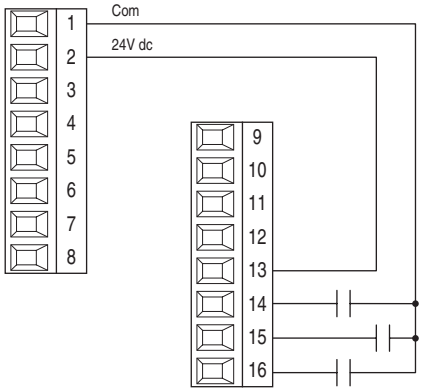
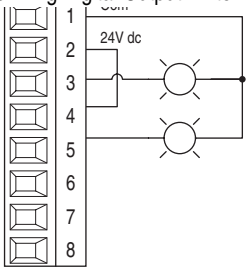
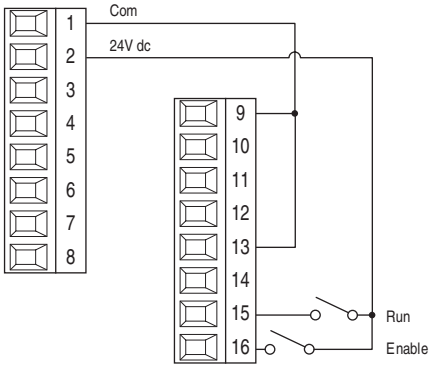
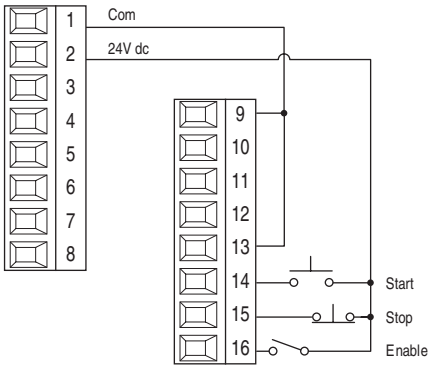
Input/Output	Connection Example	Required Parameter Changes
0-10V Analog Input	0-10V Analog Input - External Source 	
Analog Output - +/-10V DC Used to drive analog meters displaying speed and current	0-10V Analog Output 	**Using Analog Out 1, -10V to + 10V to meter Motor RPM and direction:** • Send the data to the Analog Output *Par 833* [Anlg Out1 Real] (the destination) linked to *Par 71* [Filtered SpdFdbk] (the source) • Scale the Output to the source parameter *Par 835* [Anlg Out1 Scale] = 175 (1750 *Par 4* [Motor NP RPM] / 10V) **Using Analog Out 2, -10V to + 10V to meter Motor Current:** • Send the data to the Analog Output *Par 840*[Anlg Out2 Real] (the destination) linked to *Par 308* [Output Current] (the source) Scale the Output to the source parameter *Par 822* [Anlg Out2 Scale] = xx (*Par 2* [Motor NP FLA] / 10 V Output)
Primary Encoder Interface - Supports 5V DC/12V DC differential encoders with internal power supply.	Primary Encoder - Internal Supply 	**Using Encoder 0 as speed feedback:** • *Par 222* [Mtr Fdbk Sel Pri] = 0 (Encoder 0 = default) *Par 232* [Encoder 0 PPR] = Pulses/Rev for installed encoder
	Primary Encoder - External Supply 	

Table 1.M TB2 - Digital Wiring Examples

Input/Output	Connection Example	Sourcing and Sinking Definitions
Digital Inputs used for enable and precharge control. *Note:* **24V DC Supply** - supports only on-board digital inputs. Do not use for circuits outside the drive. *Note*: The factory default for all Digital Inputs is 24V. To use 115V on Digital Inputs 4-6 see Table 1.J. *Note*: Digital Inputs 1-3 are always 24V DC.	Sourcing Digital Inputs - Internal Power Supply  Sourcing Digital Outputs - Internal Power Supply  Sinking Digital Inputs - Internal Power Supply  Sinking Digital Output - Internal Power Supply 	The digital inputs and digital outputs of the PowerFlex 700S AC drive support Sourcing or Sinking configuration. Typically, digital inputs are sourcing devices and digital outputs are sinking devices. The following definitions apply throughout this section: • **Sourcing a Digital Input** - The digital input common (return) is connected to the power supply common. Applying a positive voltage to the digital input will cause it to activate (pull up). • **Sinking a Digital Input** - The digital input common (return) is connected to the power supply positive voltage. Applying 0V or common to the digital input will cause it to activate (pull down). • **Sinking a Digital Output** - The digital output common (return) is connected to the power supply common. The device to be controlled by the digital output is connect to the positive voltage and the device common is connected to the digital output. • **Sinking a Digital Output** - The digital output common (return) is connected to the power supply positive voltage. The digital output is connect to the device to be controlled and the device common is connected to the power supply common. *Note*: Digital Inputs 1-3 can only be configured as sourcing inputs. Digital Inputs 4-6 can be configured as sourcing or sinking inputs.

Input/Output	Connection Example	
Digital Inputs 24V DC	Sourcing Digital Inputs - Internal Power Supply, 2-Wire Control 	**Required Parameter Changes** • Set Par 829 [DigIn 5 Sel] to value 7 (Run). • Par 153 [Control Options] bit 8 (3WireControl) will automatically be OFF for 2-wire control. • Set Par 168 [Normal Stop Mode] for the desired stopping mode: 0 = Ramp stop 1 = CurLim Stop 2 = Coast Stop
Digital Inputs 24V DC	Sourcing Digital Inputs- Internal Power Supply, 3-Wire 	• Set Par 829 [DigIn 5 Sel] to value 14 (Normal Stop). • Set Par 828 [DigIn 4 Sel] to value 5 {Start). • Par 153 [Control Options] bit 8 (3WireControl) will automatically be ON for 3-wire control. • Set Par 168 [Normal Stop Mode] for the desired stopping mode: 0 = Ramp stop 1 = CurLim Stop 2 = Coast Stop

Main Control Board I/O Configuration Settings

Figure 14 Main Control Board Dip Switches

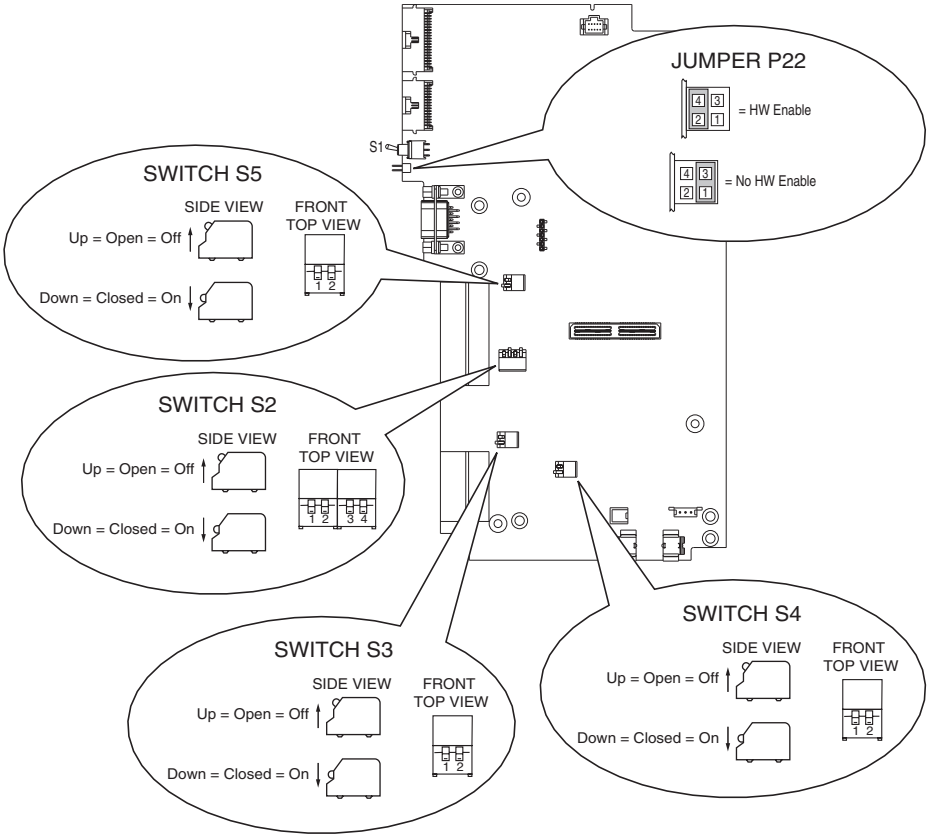


Table A Switch Settings

Function	Switch	Open	Closed	Default	Notes
HW Enable Jmp	SHUNT Jumper	pin 2-4 HW Enbl	pin 1-3 No Enbl	pin 2-4 HW Enbl	No Jmpr = HW Enbl See window for Cnfg
Analog Input 1	S5-2	Voltage	Current	Voltage	Change with Power Off
Analog Input 2	S5-1	Voltage	Current	Voltage	Change with Power Off
Digital Inputs 4-6 Voltage	S4-1,2	115V AC	24V DC	24V DC	Change with Power Off
Digital Input 1 Voltage	S3-1	24V DC	12V DC	24V DC	Change with Power Off
Digital Input 2 Voltage	S3-2	24V DC	12V DC	24V DC	Change with Power Off
Encoder Supply Voltage	S2-4	12V DC	5V DC	12V DC	Change with Power Off
Encoder Signal A Voltage	S2-1	12V DC	5V DC	12V DC	Typically, set all switches the same
Encoder Signal B Voltage	S2-2	12V DC	5V DC	12V DC	
Encoder Signal Z Voltage	S2-3	12V DC	5V DC	12V DC	

Function	Switch	Up	Center	Down	Notes
DriveLogix Processor	S1	Prog	Remote	RUN	Processor Mode

Please note there are two separate values for an encoder.

CE Conformity

Conformity with the Low Voltage (LV) Directive and Electromagnetic Compatibility (EMC) Directive has been demonstrated using harmonized European Norm (EN) standards published in the Official Journal of the European Communities. PowerFlex Drives comply with the EN standards listed below when installed according to the User and Reference Manuals.

Declarations of Conformity are available online at: **http://www.ab.com/certification/ce/docs**.

Low Voltage Directive (73/23/EEC)

- EN50178 Electronic equipment for use in power installations.

EMC Directive (89/336/EEC)

- EN61800-3 Adjustable speed electrical power drive systems Part 3: EMC product standard including specific test methods.

General Notes

- If the adhesive label is removed from the top of the drive, the drive must be installed in an enclosure with side openings less than 12.5 mm (0.5 in.) and top openings less than 1.0 mm (0.04 in.) to maintain compliance with the LV Directive.
- The motor cable should be kept as short as possible in order to avoid electromagnetic emission as well as capacitive currents.
- Use of line filters in ungrounded systems is not recommended.
- PowerFlex drives may cause radio frequency interference if used in a residential or domestic environment. The user is required to take measures to prevent interference, in addition to the essential requirements for CE compliance listed below, if necessary.
- Conformity of the drive with CE EMC requirements does not guarantee an entire machine or installation complies with CE EMC requirements. Many factors can influence total machine/installation compliance.
- PowerFlex drives can generate conducted low frequency disturbances (harmonic emissions) on the AC supply system. More information regarding harmonic emissions can be found in the *PowerFlex Reference Manual Vol. 2*.

Essential Requirements for CE Compliance

Conditions 1-6 listed below must be satisfied for PowerFlex drives to meet the requirements of EN61800-3.

1. Standard PowerFlex 700S CE compatible Drive.
2. Review important precautions/attentions statements throughout this document before installing drive.
3. Grounding as described on page 1-5.
4. Output power, control (I/O) and signal wiring must be braided, shielded cable with a coverage of 75% or better, metal conduit, or have shielding/ cover with equivalent attenuation.
5. All shielded cables should terminate with proper shielded connector.
6. Output power cable to motor must not exceed lengths in Table 1.O

Table 1.O PowerFlex 700S EN61800-3 EMC Compatibility(1)

Frame(s)	Second Environment	First Environment Restricted Distribution	
	Restrict Motor Cable to 30 m (98 ft.)	*Restrict Motor Cable to 150 m (492 ft.)*	
	Any Drive and Option	*Any Drive and Option*	*External Filter Required*
1 - 6	✔	✔	✔

(1) External filters for First Environment installations and increasing motor cable lengths in Second Environment installations are available. Roxburgh models KMFA (RF3 for UL installations) and MIF or Schaffner FN3258 and FN258 models are recommended. Refer to http://www.deltron-emcon.com and http://www.mtecorp.com (USA) or http://www.schaffner.com, respectively.

Start-Up

This chapter describes how to start-up the PowerFlex 700S Drive. Refer to Appendix D for a brief description of the HIM (Human Interface Module).

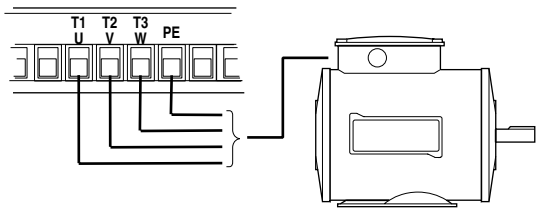
ATTENTION: Power must be applied to the drive to perform the following start-up procedure. Some of the voltages present are at incoming line potential. To avoid electric shock hazard or damage to equipment, only qualified service personnel should perform the following procedure. Thoroughly read and understand the procedure before beginning. If an event does not occur while performing this procedure, **Do Not Proceed**. **Remove Power** including user supplied control voltages. User supplied voltages may exist even when main AC power is not applied to then drive. Correct the malfunction before continuing.

Prepare for Drive Start-Up

Before Applying Power to the Drive

Important: If you have a DriveLogix application, you must first connect the battery before starting this section.

❑ **1.** Confirm that motor wires are connected to the correct terminals and are secure. Confirm Frame 5 transformer connections (refer to page 1-11).

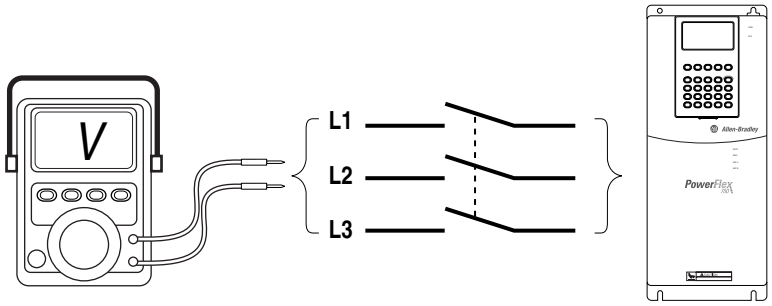


❑ **2.** If an encoder is used, confirm the encoder wires are connected to the correct terminals and are secure.

❑ **3.** Confirm that all control inputs are connected to the correct terminals and are secure.

❑ **4.** Verify that AC line power at the disconnect device is within the rated value of the drive.

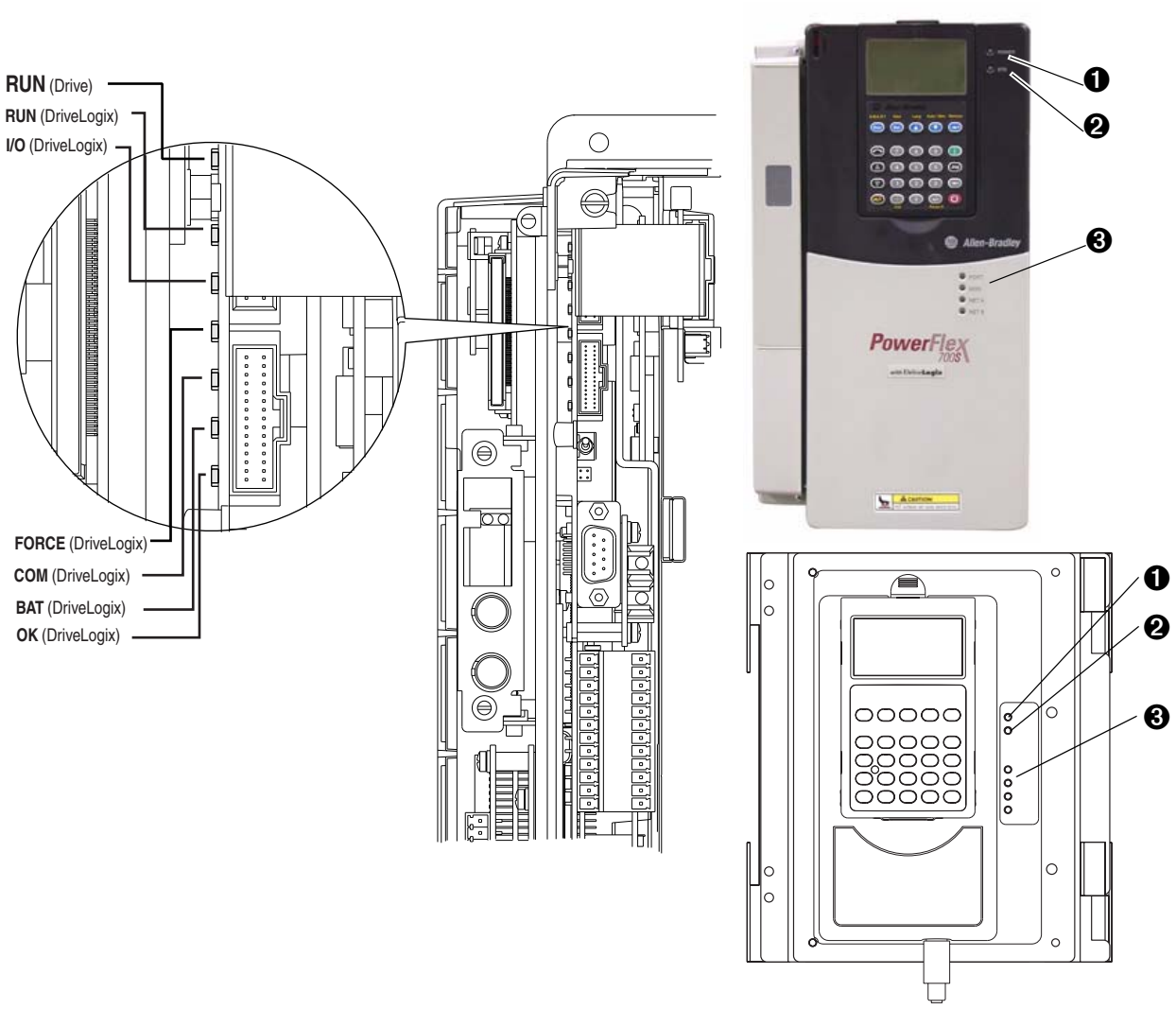
❑ **5.** Verify that control power voltage is correct.



The remainder of this procedure requires that a HIM be installed. If an operator interface is not available, remote devices should be used to start-up the drive.

If the DriveLogix option is not present the associated indicators will not be present.

ATTENTION: The controller LEDs are only operational when the drive is energized, and only visible with the drive door open. Servicing energized equipment can be hazardous. Severe injury or death can result from electrical shock, burn or unintended actuation of controlled equipment. Follow Safety related practices of NFPA 70E, *ELECTRICAL SAFETY FOR EMPLOYEE WORKPLACES*. DO NOT work alone on energized equipment!



Applying Power to the Drive

❑ **6.** Apply AC power and control voltages to the drive. Examine the *Power (PWR)* LED.

Table C Drive Status Indicator Descriptions

			#	Name	Color	State	Description
DRIVE	Power Structure		❶	PWR (Power)	Green	Steady	Illuminates when power is applied to the drive.
			❷	STS (Status)	Green	Flashing	Drive ready, but not running & no faults are present.
						Steady	Drive running, no faults are present.
					Yellow	Flashing	When running, a type 2 (non-configurable) alarm condition exists, drive continues to run. When stopped, a start inhibit exists and the drive cannot be started.
						Steady	A type 1 (user configurable) alarm condition exists, but drive continues to run.
					Red	Flashing	A fault has occurred.
						Steady	A non-resettable fault has occurred.
					Red / Yellow	Flashing Alternately	The drive is in flash recovery mode. The only operation permitted is flash upgrade.
	Control Assembly	Communications	❸	PORT	Refer to the *Communication Adapter User Manual*		Status of DPI port internal communications (if present).
				MOD			Status of communications module (when installed).
				NET A			Status of network (if connected).
				NET B			Status of secondary network (if connected).

❑ **7.** Examine the *Status (STS)* LED. Verify that it is flashing green. If it is not in this state, check the following possible causes and take the necessary corrective action.

Table D Common Causes of a Run Inhibit

Examine *Par 156* - Run Inhibit Status			
bit	**Description**		**Action**
1	No power is present at the Enable Terminal TB2 - 16		Apply the enable
2, 3, 4	A stop command is being issued		Close all stop inputs
5	Power loss event is in progress, indicating a loss of the AC input voltage		Restore AC power
6	Data supplied by the power structure EEprom is invalid or corrupt.		Cycle power. If problem persists, replace the power structure.
7	Flash Update in Progress		Complete Flash Procedures
8	Drive is expecting a Start Edge and is receiving a continuous signal.		Open all start buttons and remove all start commands
9	Drive is expecting a Jog Edge and is receiving a continuous signal.		Open all jog buttons and remove all jog commands
10	A conflict exists between the Encoder PPR programming (*Par 232 or 242*) and the encoder configuration for edge counts (*Par 233,* bits 4 & 5).		Verify encoder data and reprogram
11	The drive cannot precharge because a precharge input is programmed and no signal is present.		Reprogram the input or close the precharge control contact.
12	Digital Configuration	Start input configured but stop not configured	Program *Par 825-830* to include a stop button, rewire the drive
		Run input configured but control options do not match	Program *Par 153*, Bit 8 to “0” (2 wire control)
		Start input configured but control options do not match	Program *Par 153*, Bit 8 to “1” (3 wire control)
		Multiple inputs configured as Start or Run	Reprogram *Par 825-830* so multiple starts, multiple runs or any combination do not exist
		Multiple inputs configured as Jog1	Reprogram *Par 825-830* so only (1) is set to Jog1
		Multiple inputs configured as Jog2	Reprogram *Par 825-830* so only (1) is set to Jog2
		Multiple inputs configured as Fwd/Rev	Reprogram *Par 825-830* so only (1) is set to Fwd/Rev
14	Invalid Feedback Device for Permanent Magnet Motor Control		Set *Par 222* to Value 5 (FB Opt Port0)

Table E Common Start-Up Faults

Fault	Description	Action
Encoder Loss	One of the following has occurred on an encoder: • missing encoder (broken wire) • quadrature error • phase loss	Reconnect encoder or replace encoder.
Motor Overload	A motor overload is pending.	Enter correct motor nameplate full load amps. *Par 2* [Motor NP FLA] or reduce excess load.
Motor Poles Fault	The poles of the motor do not match its rating.	Enter correct motor nameplate information. *Par 4* [Motor NP RPM]

If any digital input is configured to Stop - CF (CF=Clear Faults) verify the signal is present or the drive will not start. Refer to Chapter 4 for a list of potential digital input conflicts.

If a fault code appears, refer to Chapter 4.

The STS LED should be flashing green at this point.

❑ **8.** Proceed to Start-Up Routine.

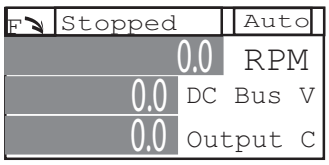
Assisted Start-Up

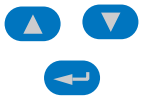
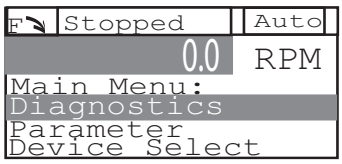
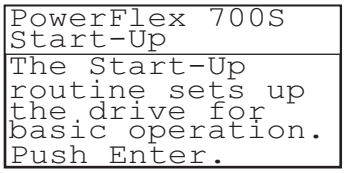
This routine prompts you for information needed to start-up a drive for most applications, such as line and motor data, commonly adjusted parameters and I/O.

Important: When using the Start-Up Assistant, always exit the Assistant before cycling power on the drive. Failure to exit may leave unwanted settings active in the drive configuration.

If, after exiting the Start-Up Assistant, external sources inhibit drive start, check *Par 671* [Start Mask].

The assisted start-up routine asks simple yes or no questions and prompts you to input required information. Access Assisted Start-Up by selecting "Start-Up" from the Main Menu.

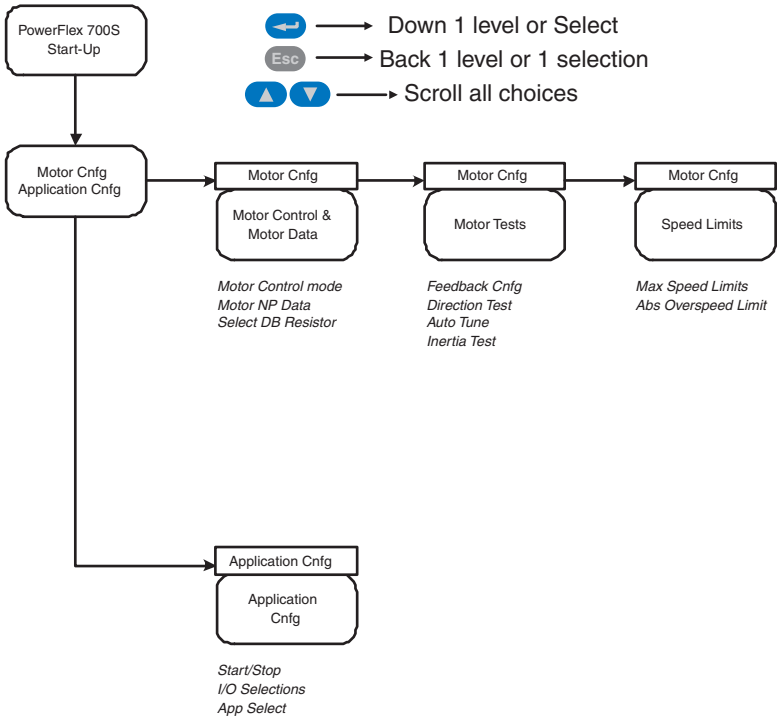
Step	Key(s)	Example LCD Displays
1. To exit the User Display screen, Press Esc.	Esc	

1. In the Main Menu, use the Down Arrow to scroll to "Start Up" 2. Press Enter. **TIP:** Throughout the Start-Up Routine many screens have more selection than shown. Use the arrow keys to scroll through all the menu options.		
1. Follow the instructions on the screen to complete the Start-Up.		

Important: If using a HIM the following functions are not available.

- Alt-Man
- Alt-Lang
- Alt-SMART

Figure 2.1 Start-Up Menu



Programming and Parameters

Chapter 3 provides a complete listing and description of the PowerFlex® 700S parameters. The parameters can be programmed (viewed/edited) using a HIM (Human Interface Module). Refer to HIM Overview on page D-1 for information on using the HIM to view and edit parameters. As an alternative, programming can also be performed using DriveTools™ software and a personal computer.

About Parameters

To configure a Drive module to operate in a specific way, drive parameters may have to be set. Three types of parameters exist:

- **ENUM Parameters**
  These parameters allow a selection from 2 or more items. The LCD HIM will display a text message for each item.
- **Bit Parameters**
  These parameters have individual bits associated with features or conditions. If the bit is 0, the feature is off or the condition is false. If the bit is 1, the feature is on or the condition is true.
- **Numeric Parameters**
  These parameters have a single numeric value (i.e. 0.1 Volts).

The example on the following page shows how each parameter type is presented in this manual.

Table 3.A Table Explanation

❶	❷	❸			
No.	**Name** **Description**	**Values**		**Linkable**	**Read-Write** / **Data Type**
151	**Logic Command** The controller-drive interface (as defined by the Controller Communication Format) sets bits to enable and disable various functions and algorithms. Bits that are changed here are reflected in Par 152 [Applied LogicCmd]. Note: Bits 4 through 9 in Logic Command are NOT recalled from Control EEprom. They will be cleared upon drive powerup or following an EEprom recall operation.				
110	**Spd/Torq ModeSel** Selects the source for the drive torque reference.	Default:	1 = "Speed Reg"		
		Options:	0 = "Zero Torque" 1 = "Speed Reg" 2 = "Torque Ref" 3 = "Min Spd/Torq" 4 = "Max Spd/Torq" 5 = "Sum Spd/Torq" 6 = "AbsMn Spd/Tq"		
4	**Motor NP RPM** Set to the motor nameplate rated RPM.	Units: Default: Min/Max: Scale:	RPM Calculated 1/30000 Par 4 [Motor NP RPM] = 1.0pu		RW / 16-bit Integer

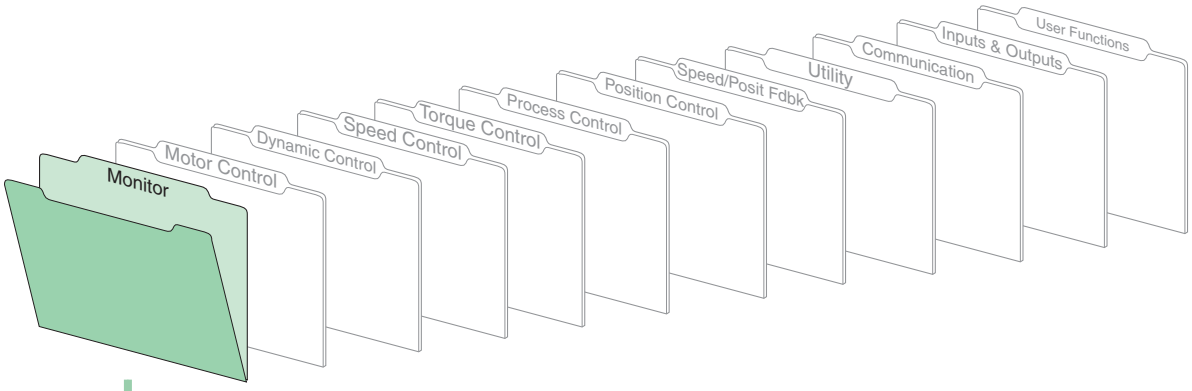
Options	PI Trim Rst	PI Trim Hold	Position En	PI Trim En	Frict Comp	Inertia Comp	Ext Flt/Alm	Reserved	Reserved	SReg IntgRst	SReg IntgHld	SpdRamp Hold	Time Axis En	TachLoss Rst	Spd S Crv En	SpdRamp Dsbl
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description			Linkable	Read-Write	Data Type
❶	**No.** - Parameter Number					
	Parameter value cannot be changed until the drive is stopped.					
❷	**Name** - Parameter name as it appears in the DriveExecutive software.					
	Description - Brief description of parameter function.					
❸	**Values** - Define the various operating characteristics of the parameter. *There are 3 types of Values.*					
	ENUM	Default:	Lists the value assigned at the factory.			
		Options:	Displays the selections available.			
	Bit	Default:	Lists the value assigned at the factory.			
		Options:	Displays the selections available.			
	Numeric	Default	Lists the value assigned at the factory.			
		Min/Max.	Displays lowest possible setting/Displays highest possible setting.			
		Scale:	Value sent from Controller or Comm Device = Drive Parameter Value x Comm Scale			
	A checkmark (✓) indicates that the parameter is linkable.			✓		
	Indicates if parameter is read-write or read-only. **RW**=Read-Write **RO**=Read Only				RW RO	
	Indicates parameter data type (i.e. integer, floating point, boolean).					16-bit Integer

How Parameters are Organized

DriveExecutive programming software displays parameters in “Linear List” or “File Group Parameter” format. Viewing the parameters in “File Group Parameter” format simplifies programming by grouping parameters that are used for similar functions. There are twelve files. Each file is divided into multiple groups of parameters.



Metering

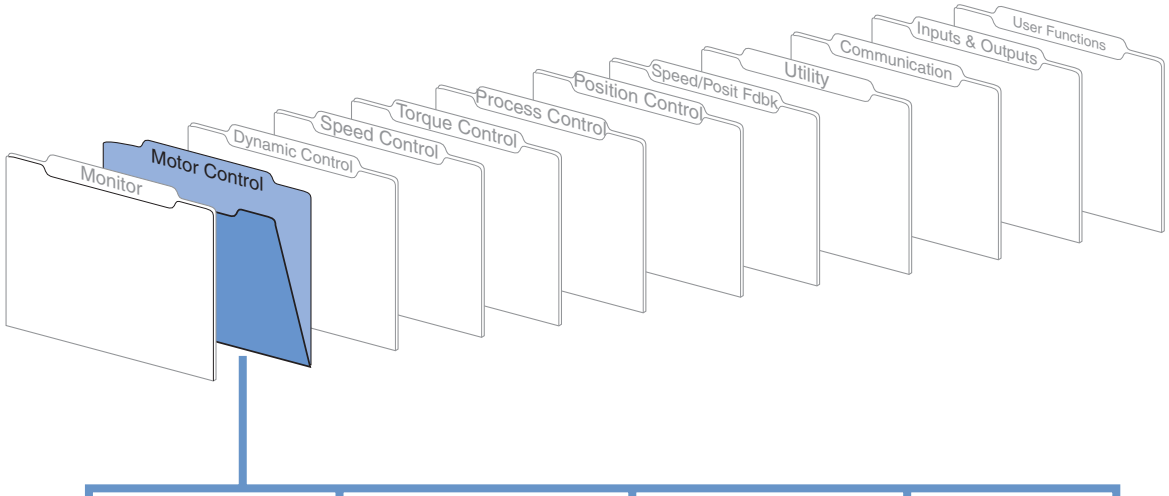
310	Output Freq
49	Selected SpdRefA
50	Selected SpdRefB
40	Selected Spd Ref
43	Ramped Spd Ref
301	Motor Speed Ref
319	Selected Trq Ref
300	Motor Spd Fdbk
72	Scaled Spd Fdbk
297	Output Curr Disp
499	Trq CurFdbk (Iq)
309	% Motor Flux
312	MotorFluxCurr FB
307	Output Voltage
311	Output Power
762	Position Fdbk
299	Elapsed MWHrs
298	Elapsed Run Time
306	DC Bus Voltage
313	Heatsink Temp
345	Drive OL JnctTmp
824	Local I/O Status
801	Anlg In1 Value
807	Anlg In2 Value
813	Anlg In3 Volts
837	Anlg Out1 Value
844	Anlg Out2 Value

Control Status

150	Logic State Mach
155	Logic Status
157	Logic Ctrl State
156	Start Inhibits
166	Motor Ctrl Cmmd
167	Motor Ctrl Ackn
555	MC Status
346	Drive OL Status
159	DigIn ConfigStat
165	Tune Test Status
317	SL System Time
554	LED Status

Drive Data

400	Rated Amps
401	Rated Volts
420	Pwr Strct Mode
404	Dead Time
314	VPL Firmware Rev
315	VPL Build Number
457	MC Firmware Rev
456	MC Build Number
900	SynchLink Rev
901	SL System Rev



Motor Data

1	Motor NP Volts
2	Motor NP FLA
3	Motor NP Hertz
4	Motor NP RPM
5	Motor NP Power
6	Mtr NP Pwr Units
336	Motor OL Factor
7	Motor Poles
9	Total Inertia

Monitoring

525	Slip Ratio
526	Stator Frequency
434	Mtr Vds Base
435	Mtr Vqs Base
441	Vds Fdbk Filt
442	Vqs Fdbk Filt
497	Vqs Command
498	Vds Command
495	Iqs Command
496	Ids Command
499	Trq CurFdbk (Iq)
489	Flx CurFdbk (Id)

Drive Config

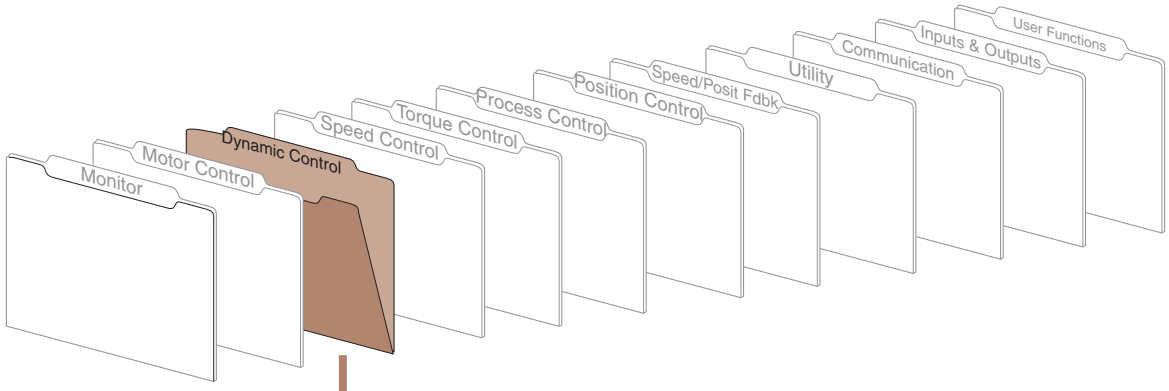
485	Motor Ctrl Mode
402	PWM Frequency
403	Voltage Class
405	Dead Time Comp
409	Line Undervolts
410	PreChrg TimeOut
411	PreChrg Control
510	FVC Mode Config
511	FVC2 Mode Config
512	PMag Mode Cnfg
513	V/Hz Mode Config
514	Test Mode Config
515	FVC Tune Config
516	FVC2 Tune Config
517	PMag Tune Config
505	PM TestWait Time
506	PM Test Idc Ramp
507	PM Test FreqRamp
508	PM Test Freq Ref
509	PM Test I Ref
424	Flux Ratio Ref

Tuning

423	Iqs Rate Limit
453	Iu Offset
454	Iw Offset
425	Flux Rate Limit
426	Flux Satur Coef
443	Flux Reg P Gain1
470	Flux Reg P Gain2
444	Flux Reg I Gain
533	Flux Gain Adjust
500	Bus Util Limit
501	Torque En Dly
437	Vqs Max
438	Vds Max
439	Vqs Min
440	Vds Min
469	FVC CEMF Comp
449	SrLss Reg I Gain
450	SrLss Reg P Gain
447	Slip Reg P Gain
448	Slip Reg I Gain
446	Slip Gain Min
445	Slip Gain Max
552	Slip Preload Val
553	Slip Slew Rate
472	PreCharge Delay
431	Test Current Ref
432	Test Freq Ref
433	Test Freq Rate
477	Est Theta Delay
428	IReg IGain Fctr
537	SrLssAngleStblty
538	SrLss VoltStblty
539	SrLss StbltyFilt
54	Inertia TrqLpfBW
551	CurrFdbk AdjTime

Autotune Results

421	Iqs Integ Freq
422	Iqs Reg P Gain
429	Ids Integ Freq
430	Ids Reg P Gain
486	Rated Slip Freq
487	Motor NTC Coef
488	Flux Current
490	StatorInductance
491	StatorResistance
492	Leak Inductance
493	Leak Indc Satur1
494	Leak Indc Satur2
502	Rotor Resistance
503	Current Reg BW
504	PM AbsEncd Offst
427	PM Mtr CEMF Comp
520	PM Q Inductance
521	PM D Inductance
522	PM Stator Resist
523	PM Mtr CEMF Coef



Configuration

151	Logic Command
152	Applied LogicCmd
153	Control Options
158	Drive Logic Rslt
160	Zero Speed Lim
169	SrLss ZeroSpdLim
335	Abs OverSpd Lim

Overload Protect

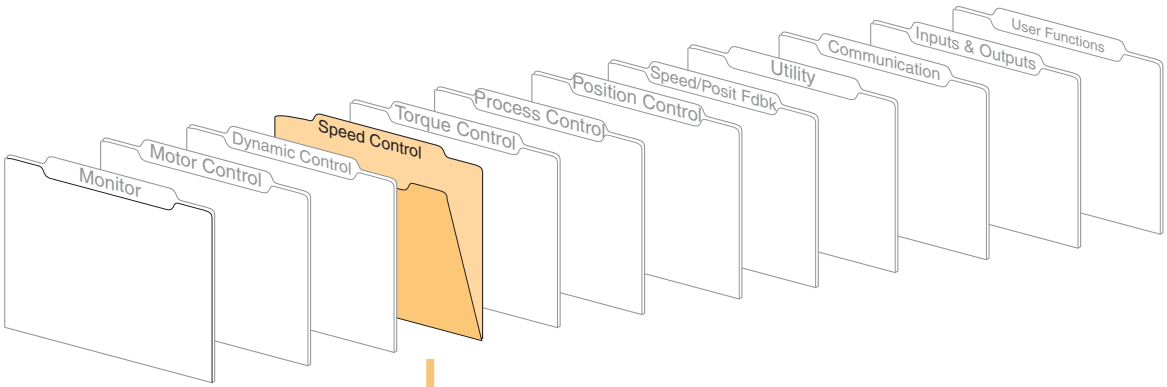
337	Mtr I2T Curr Min
338	Mtr I2T Spd Min
339	Mtr I2T Calibrat
340	Mtr I2T Trp ThrH
341	Mtr I2T Count
343	OL OpnLp CurrLim
344	OL ClsLp CurrLim

Stop/Brake Modes

168	Normal Stop Mode
414	Brake/Bus Cnfg
415	BusReg/Brake Ref
416	Brake PulseWatts
417	Brake Watts
154	Stop Dwell Time
545	Bus Reg Ki
546	Bus Reg Kp
547	Bus Reg Kd
1125	DC Brake Level
1126	DC Brake Time

Power Loss

406	Power Loss Mode
407	Power Loss Time
408	Power Loss Level



Reference

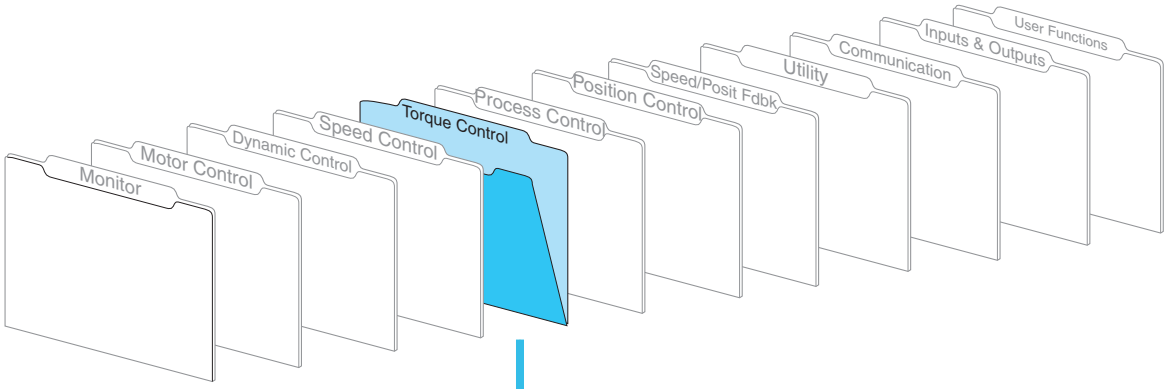
27	Speed Ref A Sel
28	Speed Ref B Sel
10	Speed Ref 1
11	Spd Ref1 Divide
12	Speed Ref 2
13	Spd Ref2 Multi
14	Preset Speed 1
15	Preset Speed 2
16	Preset Speed 3
17	Preset Speed 4
18	Preset Speed 5
19	Preset Speed 6
20	Preset Speed 7
29	Jog Speed 1
39	Jog Speed 2
40	Selected Spd Ref
30	Min Spd Ref Lim
31	Max Spd Ref Lim
41	Limited Spd Ref
32	Accel Time 1
33	Decel Time 1
34	S Curve Time
43	Ramped Spd Ref
53	Drive Ramp Rslt
45	Delayed Spd Ref
61	Virt Encoder EPR
62	Virt Encdr Posit
63	Virt Encdr Dlyed
37	Spd Ref Bypass
35	SpdRef Filt Gain
36	SpdRef Filt BW
38	Speed Ref Scale
46	Scaled Spd Ref
21	Speed Trim 1
47	SpdRef + SpdTrm1
56	Inertia SpeedRef
9	Total Inertia
57	InertiaAccelGain
58	InertiaDecelGain
60	DeltaSpeedScale
55	Speed Comp
59	Inertia Trq Add
64	FricComp Spd Ref
65	FricComp Setup
66	FricComp Stick
67	FricComp Slip
68	FricComp Rated
69	FricComp Trq Add

Regulator

48	Spd Ref Bypass2
23	Speed Trim 3
24	SpdTrim 3 Scale
22	Speed Trim 2
25	STrim2 Filt Gain
26	SpdTrim2 Filt BW
74	Atune Spd Ref
75	Rev Speed Lim
76	Fwd Speed Lim
301	Motor Speed Ref
300	Motor Spd Fdbk
88	SpdReg FilterSel
93	SRegFB Filt Gain
94	SReg FB Filt BW
71	Filtered SpdFdbk
100	Speed Error
89	Spd Err Filt BW
84	SpdReg AntiBckup
85	Servo Lock Gain
87	SReg Trq Preset
9	Total Inertia
90	Spd Reg BW
97	Act Spd Reg BW
91	Spd Reg Damping
81	Spd Reg P Gain
82	Spd Reg I Gain
92	SpdReg P Gain Mx
86	Spd Reg Droop
101	SpdReg Integ Out
106	SrLss Spd Reg BW
104	SrLss Spd Reg Kp
105	SrLss Spd Reg Ki
102	Spd Reg Pos Lim
103	Spd Reg Neg Lim
95	SRegOut FiltGain
96	SReg Out Filt BW
302	Spd Reg PI Out

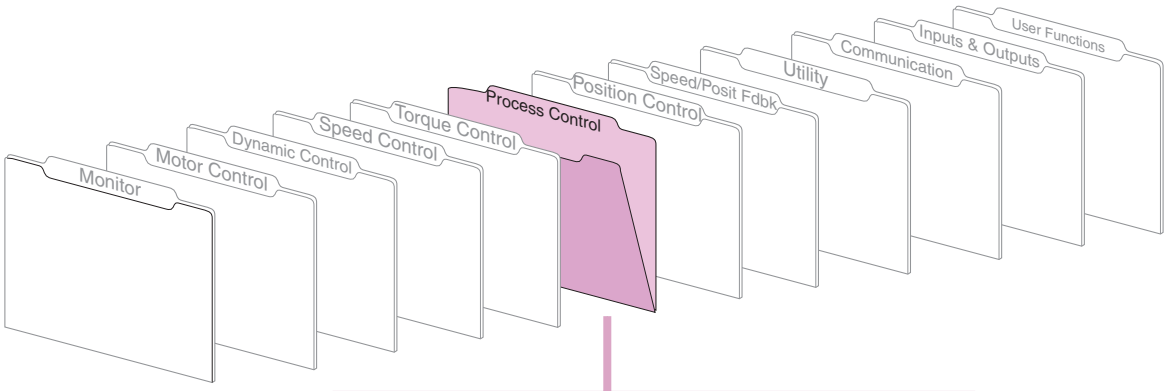
Setpoint Monitor

171	Set Speed Lim
172	Setpt 1 Data
173	Setpt1 TripPoint
174	Setpt 1 Limit
175	Setpt 2 Data
176	Setpt2 TripPoint
177	Setpt 2 Limit



Torque	
110	Speed/TorqueMode
302	Spd Reg PI Out
59	Inertia Trq Add
69	FricComp Trq Add
111	Torque Ref 1
112	Torque Ref1 Div
113	Torque Ref 2
114	Torque Ref2 Mult
115	Torque Trim
119	SLAT ErrorSetpnt
120	SLAT Dwell Time
319	Selected Trq Ref
116	Torque Step
129	Atune Trq Ref
117	NotchAttenuation
118	Notch Filt Freq
415	BusReg/Brake Ref
401	Rated Volts
306	DC Bus Voltage
300	Motor Spd Fdbk
127	Mtring Power Lim
128	Regen Power Lim
353	Iq Actual Lim
125	Torque Pos Limit
126	Torque Neg Limit
123	Trq PosLim Actl
124	Trq NegLim Actl
303	Motor Torque Ref
132	Inert Adapt Sel
133	Inert Adapt BW
134	Inert Adapt Gain
221	Load Estimate

Current	
303	Motor Torque Ref
309	% Motor Flux
359	Motor Flux Est
360	Min Flux
361	Flx LpassFilt BW
350	Iq Actual Ref
351	Iq Ref Trim
308	Output Current
343	OL OpnLp CurrLim
356	Mtr Current Lim
362	Current Lmt Gain
352	Is Actual Lim
488	Flux Current
312	MotorFluxCurr FB
345	Drive OL JnctTmp
313	Heatsink Temp
346	Drive OL Status
344	OL ClsLp CurrLim
353	Iq Actual Lim
354	Iq Rate Limit
355	Iq Ref Limited
305	Mtr Trq Curr Ref

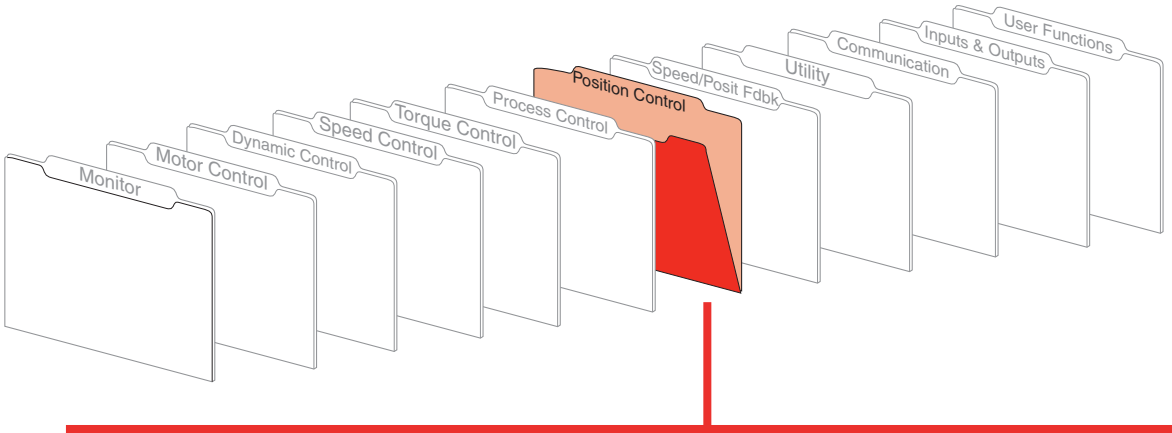


Regulator

181	PI Reference
182	PI Feedback
184	PI Lpass Filt BW
183	PI Error
185	PI Preload
186	PI Prop Gain
187	PI Integ Time
188	PI Integ HLim
189	PI Integ LLim
190	PI Integ Output
191	PI High Limit
192	PI Lower Limit
180	PI Output

Limit Generator

202	Time Axis Rate
203	Time Axis Output
204	LimGen Y axis Mx
205	LimGen Y axis Mn
206	LimGen X axis In
207	Limit Gen Hi Out
208	Limit Gen Lo Out



Position Config

740	Position Control
741	Position Status
742	Posit Ref Sel
777	PositionFdbk Sel
784	Posit Detct1 In
780	PositDetct1 Stpt
785	Posit Detct2 In
781	PositDetct2 Stpt
782	In Posit BW
783	In Posit Dwell

Interp / Direct

748	CoarsePosit Trgt
750	Coarse Spd Trgt
749	Interp Position
751	Interp Speed
752	Interp AccelRate
693	Interp SyncInput
743	Aux Posit Ref
745	PositRef EGR Mul
746	PositRef EGR Div
744	PositRef EGR Out
757	Abs Posit Offset
753	Posit Offset 1
754	Posit Offset 2
755	Posit Offset Spd
756	X Offst SpdFilt
747	Position Cmmd
762	Position Fdbk
764	Posit Load Fdbk
766	Posit FB EGR Mul
767	Posit FB EGR Div
763	Position Actual
765	Posit Actl Load
769	Position Error
796	Posit Gear Ratio
768	PositReg P Gain
770	PositReg Integ
772	XReg Integ LoLim
773	XReg Integ HiLim
774	XReg Integ Out
771	PositReg Droop
775	XReg Spd LoLim
776	XReg Spd HiLim
778	X Notch Attenu
779	X Notch FiltFreq
318	Posit Spd Output

Point to Point

758	Pt-Pt Posit Ref
745	PositRef EGR Mul
746	PositRef EGR Div
744	PositRef EGR Out
753	Posit Offset 1
754	Posit Offset 2
755	Posit Offset Spd
756	X Offst SpdFilt
747	Position Cmmd
757	Abs Posit Offset
762	Position Fdbk
763	Position Actual
769	Position Error
796	Posit Gear Ratio
768	PositReg P Gain
761	Pt-Pt Filt BW
759	Pt-Pt Accel Time
760	Pt-Pt Decel Time
775	XReg Spd LoLim
776	XReg Spd HiLim
778	X Notch Attenu
779	X Notch FiltFreq
318	Posit Spd Output
797	BasicIndx Step
798	BasicIndx Preset
799	BasicIndx Output
1130	PPMP Pos Command
1131	PPMP Pos Mul
1132	PPMP Pos Div
1133	PPMP Scaled Cmd
1134	PPMP Control
1135	PPMP Status
1136	PPMP Rev Spd Lim
1137	PPMP Fwd Spd Lim
1138	PPMP Over Ride
1139	PPMP Accel Time
1140	PPMP Decel Time
1141	PPMP SCurve Time
1142	PPMP Spd Output
1143	PPMP Pos Output
1144	PPMP Pos To Go

Sync Generator

786	Xsync Status
787	Xsync Gen Period
317	SL System Time
788	Xsync In 1
789	Xsync Out 1
790	Xsync In 2
791	Xsync Out 2
792	Xsync Out 2 Dly
793	Xsync In 3
794	Xsync Out 3
795	Xsync Out 3 Dly

Motion

684	MotnUpdatePeriod
685	Motn CoarseMulti
686	Motn Config
687	Motn Axis Status
688	Motn AxisControl
689	Motn Axis Resp
690	Motn Cnct Status
691	Motn EventStatus
692	Motn Event Ctrl
694	Motn Mx Pos Trvl
695	Motn Mx Neg Trvl
696	Motn PositErrTol
697	MotnPositLockTol
698	Motn Posit Cmmd
699	Motn Speed Cmmd
700	Motn Posit Sync
701	FdbkAxis FdbkSel
702	FdbkAxis FdbkVal
703	Motn TP Select
704	Motn TP Value
705	Motn RotaryCmmd
706	MotnUnwdTurnCmmd
707	SrvoAxis RotFdbk
708	SrvoAxisUnwdFdbk
709	FdbkAxis RotFdbk
710	FdbkAxisUnwdFdbk
711	MotnCnfgErrParam

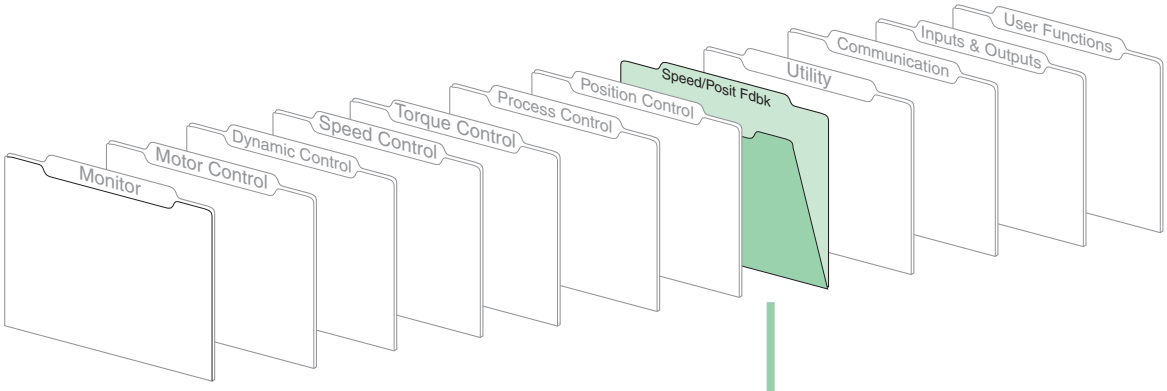
Phase Lock Loop

720	PLL Control
721	PLL Position Ref
722	PLL BandWidth
723	PLL Rev Input
724	PLL Rev Output
725	PLL EPR Input
726	PLL EPR Output
727	PLL VirtEncdrRPM
728	PLL Ext Spd Ref
729	PLL Ext SpdScale
730	PLL LPFilter BW
731	PLL Posit Out
732	PLL Posit OutAdv
733	PLL FiltPositOut
734	PLL Speed Out
735	PLL SpeedOut Adv

Homing

1120	Home Accel Time
1121	Home Decel Time
1122	Home Speed
1123	Home Position

Note: The Position Control function is disabled by default. To enable the Position Control function, set *Par 147 bit 16* to “1” enable.



Feedback Config

222	MtrFdbk Sel Pri
223	MtrFdbk Sel Alt
777	PositionFdbk Sel
224	TachSwitch Level
300	Motor Spd Fdbk
762	Position Fdbk
73	Spd Fdbk Scale
72	Scaled Spd Fdbk

Encoder Port 0/1

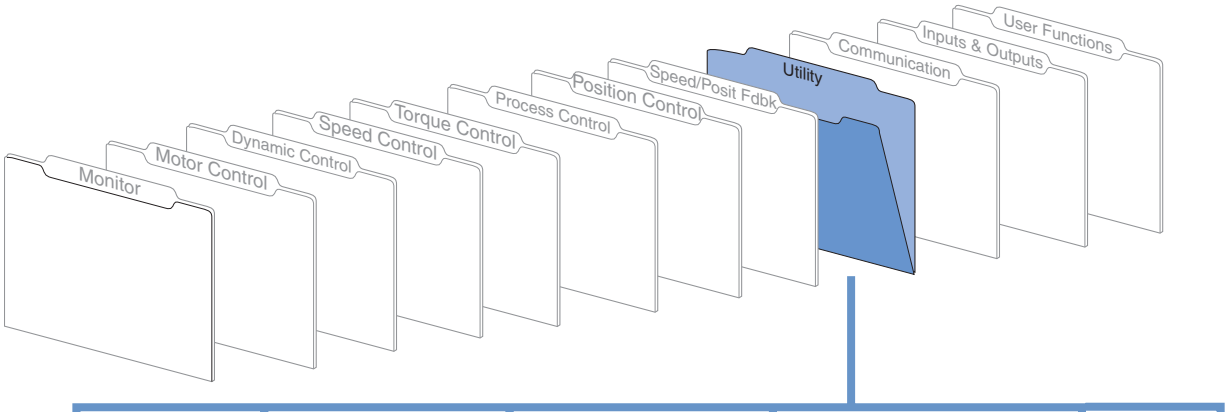
233	Encdr 0/1 Config
234	Encdr 0/1 Error
232	Encoder0 PPR
231	Encdr0 Spd Fdbk
230	Encdr0 Position
242	Encoder1 PPR
241	Encdr1 Spd Fdbk
240	Encdr1 Position
236	Enc0/1 RegisCnfg
237	Enc0/1 RegisCtrl
238	Enc0/1 RegisStat
235	Encdr0 RegisLtch
239	Encdr1 RegisLtch

Calculated Fdbk

225	Virtual Edge/Rev
226	Motor Speed Est
227	Motor Posit Est
228	MtrSpd Simulated
229	MtrPosit Simulat

Feedback Opt 0/1

249	Fdbk Option ID
251	FB Opt0 Spd Fdbk
250	FB Opt0 Posit
253	FB Opt1 Spd Fdbk
252	FB Opt1 Posit
259	Stegmann0 Cnfg
260	Stegmann0 Status
263	Heidenhain0 Cnfg
264	Heidenhain0 Stat
265	Heidn Mkr Offset
266	Heidn Encdr Type
267	Heidn Encdr PPR
268	Resolver0 Cnfg
269	Resolver0 Status
277	Reslvr0 Type Sel
272	Reslvr0 SpdRatio
273	Reslvr0 Carrier
274	Reslvr0 In Volts
275	Rslvr0 XfrmRatio
276	Reslvr0 CableBal
254	Opt0/1 RegisCnfg
255	Opt0/1 RegisCtrl
256	Opt0/1 RegisStat
257	Opt 0 Regis Ltch
258	Opt 1 Regis Ltch
286	Linear1 Status
289	Lin1 Update Rate
290	Linear1 CPR
285	Linear1 Config
291	Lin1Stahl Status



Drive Memory

196 ParamAccessLevel
145 ApplicationGroup
147 FW Functions En
149 FW FunctionsActl
146 FW TaskTime Sel
148 FW TaskTime Actl

Diagnostics

155 Logic Status
156 Start Inhibits
304 Limit Status
824 Local I/O Status
320 Exception Event1
321 Exception Event2
322 Exception Event3
326 Alarm Status 1
327 Alarm Status 2
328 Alarm Status 3
323 Fault Status 1
324 Fault Status 2
325 Fault Status 3
331 LstFaultStopMode
313 Heatsink Temp
345 Drive OL JnctTmp
346 Drive OL Status
316 SynchLink Status
902 SL Error Status
903 SL Error History
518 MC Diag Status
519 MC Diag Done
463 MC Diag Error 1
464 MC Diag Error 2
465 MC Diag Error 3
894 SL CRC Err Accum
895 SL CRC Error
896 SL BOF Err Accum
897 SL BOF Error
898 SL CRC Err Limit
899 SL BOF Err Limit
332 700L EventStatus*
333 700L FaultStatus*
334 700L AlarmStatus*

Fault/Alm Config

379 Ext Flt/Alm Cnfg
374 Motor Stall Cnfg
373 Motor Stall Time
382 MC Cmd Lim Cnfg
381 PreChrg Err Cnfg
393 BusUndervoltCnfg
394 VoltFdbkLossCnfg
376 Inv OL Pend Cnfg
377 Inv OL Trip Cnfg
372 Mtr OL Pend Cnfg
371 Mtr OL Trip Cnfg
375 Inv OT Pend Cnfg
369 Brake OL Cnfg
365 Fdbk LsCnfg Pri
366 Fdbk LsCnfg Alt
367 Fdbk LsCnfgPosit
391 DPI CommLoss Cfg
392 NetLoss DPI Cnfg
383 SL CommLoss Data
384 SL CommLoss Cnfg
390 SL MultErr Cnfg
385 Lgx CommLossData
386 Lgx OutOfRunCnfg
387 Lgx Timeout Cnfg
388 Lgx Closed Cnfg
389 Lgx LinkChngCnfg
370 HiHp InPhsLs Cfg
363 HiHp GndFlt Cur
364 HiHp GndFlt Dly
378 Interp Flt Cnfg
395 +Sft OvrTrvlCnfg
396 -Sft OvrTrvlCnfg
397 +Hrd OvrTrvlCnfg
398 -Hrd OvrTrvlCnfg
399 Position ErrCnfg
368 Cnv NotLogin Cfg*

Test Points

161 Logic TP Sel
162 Logic TP Data
163 Stop Oper TP Sel
164 StopOper TP Data
329 Fault TP Sel
330 Fault TP Data
77 Spd Ref TP Sel
78 Spd Ref TP RPM
79 Spd Ref TP Data
108 Spd Reg TP Sel
109 Spd Reg TP Data
347 Drive OL TP Sel
348 Drive OL TP Data
130 Trq Ref TP Sel
131 Trq Ref TP Data
357 Curr Ref TP Sel
358 Curr Ref TP Data
418 Brake TP Sel
419 Brake TP Data
178 PI TP Sel
179 PI TP Data
737 Posit TP Select
738 PositTP DataDInt
739 PositTP DataReal
892 SL Comm TP Sel
893 SL Comm TP Data
245 Spd Fdbk TP Sel
246 Spd Fdbk TP RPM
247 Spd Fdbk TP Data
261 Steg&Hiedn TPSel
262 Steg&Heidn TPDta
270 Reslvr0 TP Sel
271 Reslvr0 TP Data
287 Linear1 TP Sel
288 Linear1 TP Data
412 Power EE TP Sel
413 Power EE TP Data
466 MC TP1 Select
467 MC TP1 Value
468 MC TP1 Bit
473 MC TP2 Select
474 MC TP2 Value
475 MC FaultTPSelect
476 MC FaultTP Value
717 PLL TP Select
718 PLL TP DataDInt
719 PLL TP DataReal
1145 PPMP TP Select
1146 PPMP TP DataDInt
1147 PPMP TP DataReal

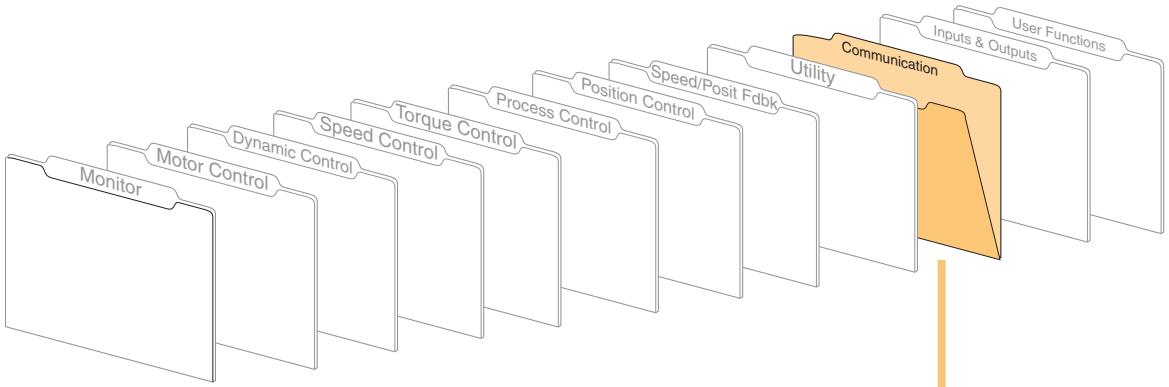
Peak Detection

210 PeakDtct Ctrl In
211 PeakDtct Status
212 PkDtct1 In DInt
213 PkDtct1 In Real
214 PeakDtct1 Preset
215 PeakDetect1 Out
216 PkDtct2 In DInt
217 PkDtct2 In Real
218 PeakDtct2 Preset
219 PeakDetect2 Out

Trending

556 Trend Control
557 Trend Status
558 Trend State
559 Trend Rate
560 Trend TrigA DInt
561 Trend TrigA Real
562 Trend TrigB DInt
563 Trend TrigB Real
564 Trend Trig Data
565 Trend Trig Bit
566 Trend PreSamples
567 Trend Mark DInt
568 Trend Mark Real
569 TrendBuffPointer
570 Trend In1 DInt
571 Trend In1 Real
572 Trend Out1 DInt
573 Trend Out1 Real
574 Trend In2 DInt
575 Trend In2 Real
576 Trend Out2 DInt
577 Trend Out2 Real
578 Trend In3 DInt
579 Trend In3 Real
580 Trend Out3 DInt
581 Trend Out3 Real
582 Trend In4 DInt
583 Trend In4 Real
584 Trend Out4 DInt
585 Trend Out4 Real

***Note:** This parameter is used by PowerFlex 700L drives only.



Masks & Owners

670	Logic Mask
671	Start Mask
672	Jog Mask
673	Direction Mask
674	Fault Clr Mask
677	Stop Owner
678	Start Owner
679	Jog Owner
680	Direction Owner
681	Fault Clr Owner

DPI Data Links

650	DPI In DataType
651	DPI Data In A1
652	DPI Data In A2
653	DPI Data In B1
654	DPI Data In B2
655	DPI Data In C1
656	DPI Data In C2
657	DPI Data In D1
658	DPI Data In D2
659	DPI Out DataType
660	DPI Data Out A1
661	DPI Data Out A2
662	DPI Data Out B1
663	DPI Data Out B2
664	DPI Data Out C1
665	DPI Data Out C2
666	DPI Data Out D1
667	DPI Data Out D2

DriveLogix I/O

600	Lgx Comm Format
601	From DL DataType
602	FromDriveLogix00
603	FromDriveLogix01
604	FromDriveLogix02
605	FromDriveLogix03
606	FromDriveLogix04
607	FromDriveLogix05
608	FromDriveLogix06
609	FromDriveLogix07
610	FromDriveLogix08
611	FromDriveLogix09
612	FromDriveLogix10
613	FromDriveLogix11
614	FromDriveLogix12
615	FromDriveLogix13
616	FromDriveLogix14
617	FromDriveLogix15
618	FromDriveLogix16
619	FromDriveLogix17
620	FromDriveLogix18
621	FromDriveLogix19
622	FromDriveLogix20
625	To DL DataType
626	To DriveLogix00
627	To DriveLogix01
628	To DriveLogix02
629	To DriveLogix03
630	To DriveLogix04
631	To DriveLogix05
632	To DriveLogix06
633	To DriveLogix07
634	To DriveLogix08
635	To DriveLogix09
636	To DriveLogix10
637	To DriveLogix11
638	To DriveLogix12
639	To DriveLogix13
640	To DriveLogix14
641	To DriveLogix15
642	To DriveLogix16
643	To DriveLogix17
644	To DriveLogix18
645	To DriveLogix19
646	To DriveLogix20

SynchLink Config

904	SL Node Cnfg
905	SL Rx CommFormat
906	SL Rx DirectSel0
907	SL Rx DirectSel1
908	SL Rx DirectSel2
909	SL Rx DirectSel3
910	SL Tx CommFormat
911	SL Tx DirectSel0
912	SL Tx DirectSel1
913	SL Tx DirectSel2
914	SL Tx DirectSel3
915	SL Rcv Events
916	SL Clr Events
917	SL Rx P0 Regis
918	SL Rx P1 Regis
921	SL Real2DInt In
922	SL Real2DInt Out
923	SL Mult Base
924	SL Mult A In
925	SL Mult B In
926	SL Mult Out
927	SL Mult State

SynchLink Input

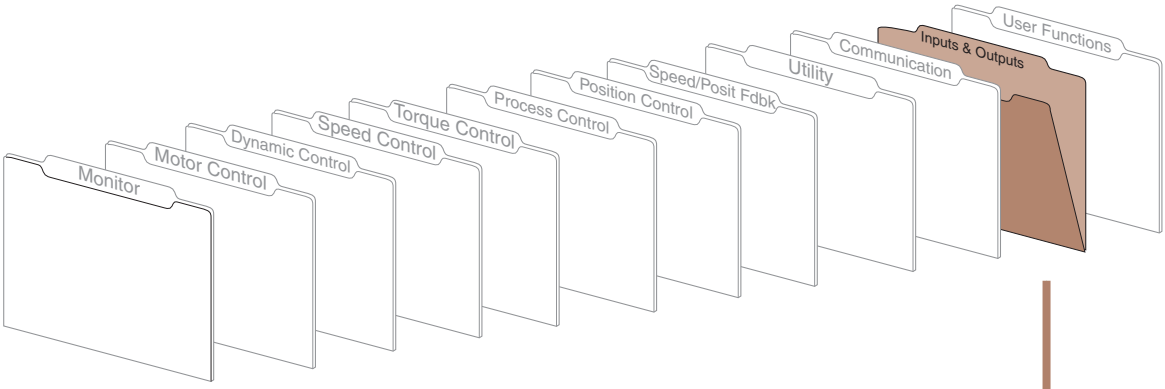
928	Rx Dir Data Type
929	SL Dir Data Rx00
930	SL Dir Data Rx01
931	SL Dir Data Rx02
932	SL Dir Data Rx03
933	Rx Buf Data Type
934	SL Buf Data Rx00
935	SL Buf Data Rx01
936	SL Buf Data Rx02
937	SL Buf Data Rx03
938	SL Buf Data Rx04
939	SL Buf Data Rx05
940	SL Buf Data Rx06
941	SL Buf Data Rx07
942	SL Buf Data Rx08
943	SL Buf Data Rx09
944	SL Buf Data Rx10
945	SL Buf Data Rx11
946	SL Buf Data Rx12
947	SL Buf Data Rx13
948	SL Buf Data Rx14
949	SL Buf Data Rx15
950	SL Buf Data Rx16
951	SL Buf Data Rx17

SynchLink Output

964	Tx Dir Data Type
965	SL Dir Data Tx00
966	SL Dir Data Tx01
967	SL Dir Data Tx02
968	SL Dir Data Tx03
969	Tx Buf Data Type
970	SL Buf Data Tx00
971	SL Buf Data Tx01
972	SL Buf Data Tx02
973	SL Buf Data Tx03
974	SL Buf Data Tx04
975	SL Buf Data Tx05
976	SL Buf Data Tx06
977	SL Buf Data Tx07
978	SL Buf Data Tx08
979	SL Buf Data Tx09
980	SL Buf Data Tx10
981	SL Buf Data Tx11
982	SL Buf Data Tx12
983	SL Buf Data Tx13
984	SL Buf Data Tx14
985	SL Buf Data Tx15
986	SL Buf Data Tx16
987	SL Buf Data Tx17

Security

714	Port Mask Act
669	Write Mask
712	Write Mask Act
670	Logic Mask
713	Logic Mask Act



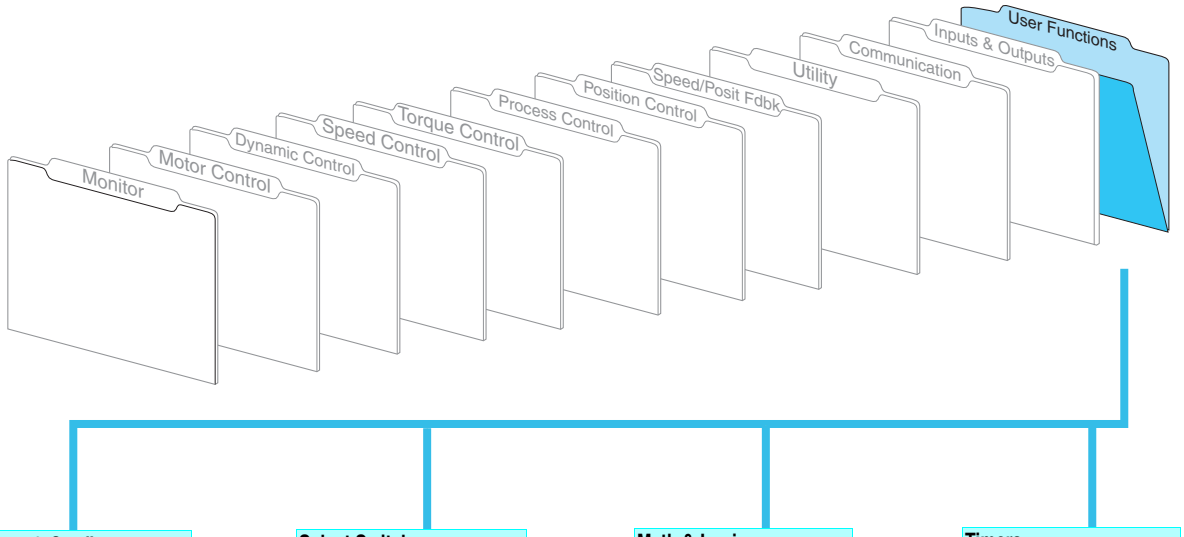
Analog Inputs	
821	Analog I/O Units
803	Anlg In1 Offset
801	Anlg In1 Value
802	Anlg In1 Scale
804	AI 1 Filt Gain
805	Anlg In1 Filt BW
800	Anlg In1 Data
1093	Anlg In1LossCnfg
809	Anlg In2 Offset
807	Anlg In2 Value
808	Anlg In2 Scale
810	AI 2 Filt Gain
811	Anlg In2 Filt BW
806	Anlg In2 Data
1094	Anlg In2LossCnfg
815	Anlg In3 Offset
813	Anlg In3 Value
814	Anlg In3 Scale
816	AI 3 Filt Gain
817	Anlg In3 Filt BW
812	Anlg In3 Data
1095	Anlg In3LossCnfg

Analog Outputs	
821	Analog I/O Units
831	Anlg Out1 Sel
832	Anlg Out1 DInt
833	Anlg Out1 Real
834	Anlg Out1 Offset
835	Anlg Out1 Scale
836	Anlg Out1 Zero
837	Anlg Out1 Value
838	Anlg Out2 Sel
839	Anlg Out2 DInt
840	Anlg Out2 Real
841	Anlg Out2 Offset
842	Anlg Out2 Scale
843	Anlg Out2 Zero
844	Anlg Out2 Value

Digital Inputs	
823	DigIn Debounce
825	Dig In1 Sel
826	Dig In2 Sel
827	Dig In3 Sel
828	Dig In4 Sel
829	Dig In5 Sel
830	Dig In6 Sel
824	Local I/O Status

Digital Outputs	
845	Dig Out1 Sel
846	Dig Out1 Data
847	Dig Out1 Bit
848	Dig Out1 On Time
849	Dig Out1 OffTime
850	Dig Out2 Sel
851	Dig Out2 Data
852	Dig Out2 Bit
853	Dig Out2 On Time
854	Dig Out2 OffTime
855	Rly Out3 Sel
856	Rly Out3 Data
857	Rly Out3 Bit
858	Rly Out3 On Time
859	Rly Out3 OffTime
824	Local I/O Status

BitSwap Control	
860	BitSwap 1A Data
861	BitSwap 1A Bit
862	BitSwap 1B Data
863	BitSwap 1B Bit
864	BitSwap 1 Result
865	BitSwap 2A Data
866	BitSwap 2A Bit
867	BitSwap 2B Data
868	BitSwap 2B Bit
869	BitSwap 2 Result
870	BitSwap 3A Data
871	BitSwap 3A Bit
872	BitSwap 3B Data
873	BitSwap 3B Bit
874	BitSwap 3 Result
875	BitSwap 4A Data
876	BitSwap 4A Bit
877	BitSwap 4B Data
878	BitSwap 4B Bit
879	BitSwap 4 Result
880	BitSwap 5A Data
881	BitSwap 5A Bit
882	BitSwap 5B Data
883	BitSwap 5B Bit
884	BitSwap 5 Result
885	BitSwap 6A Data
886	BitSwap 6A Bit
887	BitSwap 6B Data
888	BitSwap 6B Bit
889	BitSwap 6 Result



Param & Config

1000	UserFunct Enable
1001	UserFunct Actual
1002	UserData DInt 01
1003	UserData DInt 02
1004	UserData DInt 03
1005	UserData DInt 04
1006	UserData DInt 05
1007	UserData DInt 06
1008	UserData DInt 07
1009	UserData DInt 08
1010	UserData DInt 09
1011	UserData DInt 10
1012	UserData Real 01
1013	UserData Real 02
1014	UserData Real 03
1015	UserData Real 04
1016	UserData Real 05
1017	UserData Real 06
1018	UserData Real 07
1019	UserData Real 08
1020	UserData Real 09
1021	UserData Real 10

Select Switches

1022	Sel Switch Ctrl
1023	Swtch Real 1 NC
1024	Swtch Real 1 NO
1025	Swtch Real 1 Out
1026	Swtch DInt 1 NC
1027	Swtch DInt 1 NO
1028	Swtch DInt 1 Out
1029	Sel Swtch In00
1030	Sel Swtch In01
1031	Sel Swtch In02
1032	Sel Swtch In03
1033	Sel Swtch In04
1034	Sel Swtch In05
1035	Sel Swtch In06
1036	Sel Swtch In07
1037	Sel Swtch In08
1038	Sel Swtch In09
1039	Sel Swtch In10
1040	Sel Swtch In11
1041	Sel Swtch In12
1042	Sel Swtch In13
1043	Sel Swtch In14
1044	Sel Swtch In15
1045	SelSwtch RealOut
1046	SelSwtch DIntOut

Math & Logic

1047	DInt2Real1 In
1048	DInt2Real1 Scale
1049	DInt2Real1Result
1150	DInt2Real2 In
1151	DInt2Real2 Scale
1152	DInt2Real2Result
1050	Real2DInt In
1051	Real2DInt Scale
1052	Real2DInt Result
1053	MulDiv 1 Input
1054	MulDiv 1 Mul
1055	MulDiv 1 Div
1056	MulDiv 1 Result
1057	MulDiv 2 Input
1058	MulDiv 2 Mul
1059	MulDiv 2 Div
1060	MulDiv 2 Result
1061	Logic Config
1062	Logic/Cmpr State
1063	Logic 1A Data
1064	Logic 1A Bit
1065	Logic 1B Data
1066	Logic 1B Bit
1067	Logic 2A Data
1068	Logic 2A Bit
1069	Logic 2B Data
1070	Logic 2B Bit
1071	Compare 1A
1072	Compare 1B
1073	Compare 2A
1074	Compare 2B
1096	AddSub 1 Input
1097	AddSub 1 Add
1098	AddSub 1 Subtrct
1099	AddSub 1 Result
1100	AddSub 2 Input
1101	AddSub 2 Add
1102	AddSub 2 Subtrct
1103	AddSub 2 Result
1104	AddSub 3 Input
1105	AddSub 3 Add
1106	AddSub 3 Subtrct
1107	AddSub 3 Result

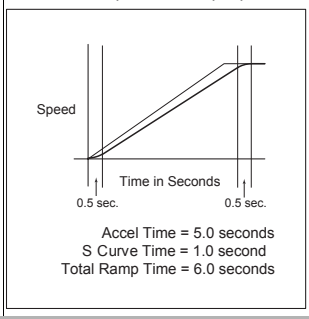
Timers

1108	DelTmr1 TrigData
1109	DelTmr1 Trig Bit
1110	DelayTimer1PrSet
1111	DelayTimer1Accu
1112	DelayTimer1Stats
1113	DelTmr2 TrigData
1114	DelTmr2 Trig Bit
1115	DelayTimer2PrSet
1116	DelayTimer2Accu
1117	DelayTimer2Stats

Parameter Data in Linear List Format

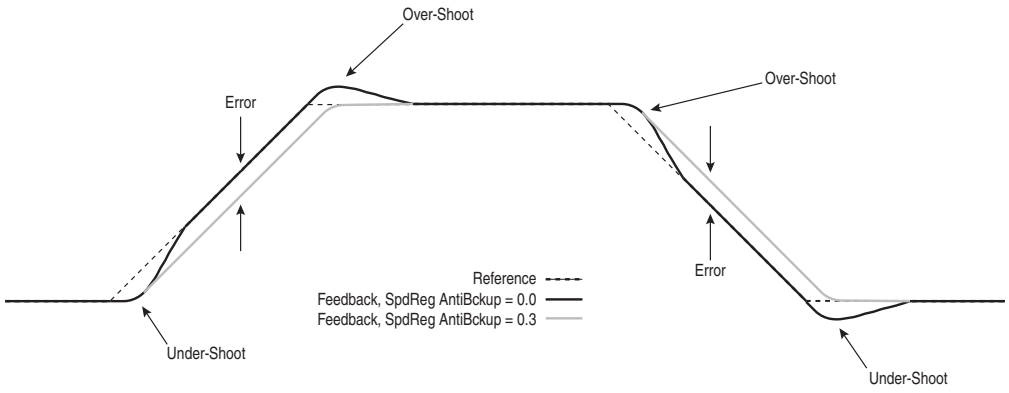
No.	Name Description	Values		Linkable	Read-Write	Data Type
1	**Motor NP Volts** Set to the motor nameplate rated volts.	Units: Default: Min/Max:	Volt Calculated (1) 75/705		RW	16-bit Integer
2	**Motor NP FLA** Set to the motor nameplate rated full load amps. Range limited by three-second inverter rating.	Units: Default: Min/Max:	Amps Calculated (1) Calculated/Calculated		RW	Real
3	**Motor NP Hertz** Set to the motor nameplate rated frequency.	Units: Default: Min/Max:	Hz Calculated (1) 2.0000/500.0000		RW	Real
4	**Motor NP RPM** Set to the motor nameplate rated RPM.	Units: Default: Min/Max:	RPM Calculated (1) 1/30000		RW	16-bit Integer
5	**Motor NP Power** Set to the motor nameplate rated power. Note: The unit of measure for this parameter was change from kW to Hp for firmware version 2.03.	Units: Default: Min/Max:	Hp Calculated (1) 0.2500/3500.0000		RW	32-bit Integer
6	**Mtr NP Pwr Units** The power units shown on the motor nameplate.	Default: Options:	0 = "Hp" 0 = "Hp" 1 = "kW"			
7	**Motor Poles** Set the number of motor poles indicated on the motor nameplate or manufacture's motor data sheet. Only even numbers of poles are allowed. Calculation: (120 * NP Hz) / NP Rpm = Poles {round down}	Units: Default: Min/Max:	Pole 4 2/40		RW	16-bit Integer
9	**Total Inertia** Time, in seconds, for a motor coupled to a load to accelerate from zero to base speed, at rated motor torque. Calculated during auto-tune.	Units: Default: Min/Max:	Sec 2.0000 0.0100/655.0000	✓	RW	Real
10	**Speed Ref 1** Sets the speed reference that the drive should use when selected by Par 27 [Speed Ref A Sel] or Par 28 [Speed Ref B Sel]. A value of 1.0 represents base speed of the motor.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
11	**Spd Ref1 Divide** Par 10 [Speed Ref 1] is divided by this number. This number can be used to scale the value of Par 10 [Speed Ref 1].	Default: Min/Max:	1.0000 -/+2200000000.0000	✓	RW	Real
12	**Speed Ref 2** Sets the speed reference that the drive should use when selected by Par 27 [Speed Ref A Sel] or Par 28 [Speed Ref B Sel]. A value of 1.0 represents base speed of the motor.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
13	**Spd Ref2 Multi** Par 12 [Speed Ref 2] is multiplied by this number. This number can be used to scale the value of Par 12 [Speed Ref 2].	Default: Min/Max:	1.0000 -/+2200000000.0000	✓	RW	Real
14 to 20	**Preset Speed 1** to **Preset Speed 7** Provides an internal fixed speed command value. The preset speeds may be selected with Par 27 [Speed Ref A Sel] or Par 28 [Speed Ref B Sel].	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+8.0000 pu Par 4 [Motor NP RPM] = 1.0 pu	✓	RW	Real
21	**Speed Trim 1** Provides an additive trim value to Par 38 [Speed Ref Scale].	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+14112.0000 Par 4 [Motor NP RPM] = 1.0 pu	✓	RW	Real
22	**Speed Trim 2** Provides an additive speed trim value to Par 47 [SpdRef + SpdTrm1] with a Lead/Lag filter. The Position regulator output is linked to this parameter by default. This speed trim value affects the speed reference input to the speed regulator.	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+14112.0000 Par 4 [Motor NP RPM] = 1.0 pu	✓	RW	Real
23	**Speed Trim 3** Provides a scalable speed trim value that will be added to Par 47 [SpdRef + SpdTrm1]. Par 24 [SpdTrim 3 Scale] scales this value prior to the trim value affecting the speed reference.	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+14112.0000 Par 4 [Motor NP RPM] = 1.0 pu	✓	RW	Real
24	**SpdTrim 3 Scale** Par 23 [Speed Trim 3] is multiplied by this number. This number can be used to scale the value of Par 23 [Speed Trim 3].	Default: Min/Max:	1.0000 -/+1000.0000	✓	RW	Real
25	**STrim2 Filt Gain** Sets the lead term for the Par 22 [Speed Trim 2] filter. Values greater than 1 will result in a lead function and value less than 1 will result in a lag function. A value of 1 will disable the filter.	Default: Min/Max:	1.0000 -/+15.0000	✓	RW	Real
26	**SpdTrim2 Filt BW** Sets the frequency for the Speed Trim 2 filter.	Units: Default: Min/Max:	R/S 200.0000 0.0000/1000.0000	✓	RW	Real

[1] The calculation is based on the drive frame size and input voltage.

No.	Name Description	Values		Linkable	Read-Write	Data Type
27 28	**Speed Ref A Sel** **Speed Ref B Sel** Selects the speed reference source for the drive. The selected speed reference values converge in the final selection of the drives speed reference with Par 152 [Applied LogicCmd] and are selected with bits 28, 29, 30. See the Block Diagrams in Appendix B for a description.	Default A: Default B: Options:	1 = "Spd Ref 1" 5 = "Preset Spd 1" 0 = "Zero Speed" 1 = "Speed Ref 1" 2 = "Speed Ref 2" 3 = "Sum Sref 1+2" 4 = "MOP Level" 5 = "Preset Spd 1" 6 = "Preset Spd 2" 7 = "Preset Spd 3 8 = "Preset Spd 4" 9 = "Preset Spd 5" 10 = "Preset Spd 6" 11 = "Preset Spd 7" 12 = "DPI Port 1" 13 = "DPI Port 2" 14 = "DPI Port 3" 15 = "Reserved" 16 = "DPI Port 5"			
29	**Jog Speed 1** Sets the speed reference that the drive should use when responding to bit 18 [Jog 1] of Par 152 [Applied LogicCmd].	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+8.0000 pu Par 4 [Motor NP RPM] = 1.0 pu	✓	RW	Real
30	**Min Spd Ref Lim** Sets the minimum speed reference limit. This value may be negative or positive but not greater than Par 31 [Max Spd Ref Lim].	Units: Default: Min/Max: Scale:	RPM 0.0000 -8.0000/Par 31 [Max Spd Ref Lim] Par 4 [Motor NP RPM] = 1.0 pu		RW	Real
31	**Max Spd Ref Lim** Sets the maximum speed reference limit. This value may be negative or positive but not less than Par 30 [Min Spd Ref Lim].	Units: Default: Min/Max: Scale:	RPM 0.0000 Par 30 [Min Spd Ref Lim]/8.0000 Par 4 [Motor NP RPM] = 1.0 pu		RW	Real
32	**Accel Time 1** Sets the rate of acceleration for all speed increases, with time in seconds to base speed. Accel Rate = Par 4 [Motor NP RPM] / Par 32 [Accel Time]	Units: Default: Min/Max:	Sec 10.0000 0.0100/6553.5000		RW	Real
33	**Decel Time 1** Sets the rate of deceleration for all speed decreases, with time in seconds to base speed. Decel Rate = Par 4 [Motor NP RPM] / Par 33 [Decel Time]	Units: Default: Min/Max:	Sec 10.0000 0.0100/6553.5000	✓	RW	Real
34	**S Curve Time** Sets the S time (Round In and Round Out) in seconds. Half of the time specified is added to the beginning and half to the end of the applied ramp. The S time is independent of speed and results in a trapezoidal torque profile. For example:  	Units: Default: Min/Max:	Sec 0.5000 0.0000/4.0000	✓	RW	Real
35	**SpdRef Filt Gain** Sets the lead term for the Speed Reference filter. Values greater than 1 will result in a lead function and values less than 1 will result in a lag function. A value of 1 will disable the filter.	Default: Min/Max:	1.0000 -/+5.0000	✓	RW	Real
36	**SpdRef Filt BW** Sets the frequency for the Speed Reference filter.	Units: Default: Min/Max:	R/S 0.0000 0.0000/500.0000	✓	RW	Real
37	**Spd Ref Bypass** The speed command after the limit, ramp and s-curve blocks. Link a source directly to this parameter to bypass these blocks.	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+14112.0000 Par 4 [Motor NP RPM] = 1.0 pu	✓	RW	Real
38	**Speed Ref Scale** This parameter is multiplied with the value in Par 37 [Spd Ref Bypass].	Default: Min/Max:	1.0000 -/+1000.0000	✓	RW	Real
39	**Jog Speed 2** Sets the speed reference that the drive should use when responding to bit 23 [Jog 2] of Par 152 [Applied LogicCmd].	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+8.0000 pu Par 4 [Motor NP RPM] = 1.0 pu	✓	RW	Real
40	**Selected Spd Ref** Displays the speed command before the speed reference limit block.	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+8.0000 pu Par 4 [Motor NP RPM] = 1.0 pu		RO	Real

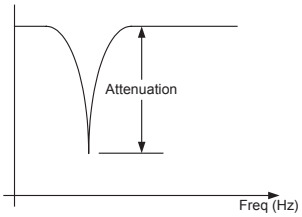
No.	Name Description	Values		Linkable	Read-Write	Data Type
41	**Limited Spd Ref** Displays the speed command after the limit block, limited by Par 75 [Rev Speed Limit] and Par 76 [Fwd Speed Limit].	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+8.0000 pu Par 4 [Motor NP RPM] = 1.0 pu		RO	Real
42	**Jerk** Allows you to adjust the amount of S-Curve or "Jerk" applied to the Accel/Decel rate. Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	900 2/30000		RW	16-bit Integer
43	**Ramped Spd Ref** Displays the speed command after the ramp block, modified by Par 32 [Accel Time 1], Par 33 [Decel Time 1] and Par 34 [S Curve Time].	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+8.0000 pu Par 4 [Motor NP RPM] = 1.0 pu		RO	Real
45	**Delayed Spd Ref** One sample period delayed output of Par 43 [Ramped Spd Ref]. Used in some applications to synchronize the speed reference value through SynchLink. This master drive Par 43 [Ramped Spd Ref] would then be transmitted to the slave drives over SynchLink.	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+14112.0000 Par 4 [Motor NP RPM] = 1.0 pu		RO	Real
46	**Scaled Spd Ref** Displays the speed command after scaling.	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+14112.0000 Par 4 [Motor NP RPM] = 1.0 pu		RO	Real
47	**SpdRef + Spd Trim1** Displays the final speed command used by the Speed Regulator. It is the sum of Par 46 [Scaled Spd Ref] and Par 21 [Speed Trim 1].	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+8.0000 pu Par 4 [Motor NP RPM] = 1.0 pu		RO	Real
48	**Spd Ref Bypass2** The speed command after the limit, ramp and s-curve blocks. Link a source directly to this parameter to bypass these blocks.	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+8.0000 pu Par 4 [Motor NP RPM] = 1.0 pu	✓	RW	Real
49	**Selected SpdRefA** Used to view the value of Speed Reference A, Par 27 [Speed Ref A Sel] from a HIM. Note: This parameter is new for firmware version 3.01.	Units: Default: Min/Max:	RPM 0.0000 -/+8.0000		RO	Real
50	**Selected SpdRefB** Used to view the value of Speed Reference B, Par 28 [Speed Ref B Sel] from a HIM. Note: This parameter is new for firmware version 3.01.	Units: Default: Min/Max:	RPM 0.0000 -/+8.0000		RO	Real
53	**Drive Ramp Rslt** Displays the speed reference value, after the limit function. This is the input to the error calculator and speed regulator. Available for use in peer-to-peer data links (DPI interface). This number is scaled so that rated motor speed will read 32768.	Default: Min/Max:	0 -/+262144		RO	32-bit Integer
54	**Inertia TrqLpfBW** Sets the bandwidth of the inertia compensation torque output low pass filter. A value of 0.0 will disable the filter. Note: This parameter is new for firmware version 3.01.	Units: Default: Min/Max:	R/S 35.0000 0.0000 /2000.0000	✓	RW	Real
55	**Speed Comp** Displays the derivative or change in Par 56 [Inertia SpeedRef] on a per second basis. Link this parameter to Par 23 [Speed Trim 3] and set Par 24 [SpdTrim 3 Scale] to 0.002 to reduce position error in following applications.	Units: Default: Min/Max:	/Sec 0.0000 -/+2200000000.0000		RO	Real
56	**Inertia SpeedRef** The speed input of the inertia compensator. Link this parameter to the output of an internal ramp or s-curve block. The inertia compensator generates a torque reference that is proportional to the rate of change of speed input and total inertia.	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+14112.0000 Par 4 [Motor NP RPM] = 1.0 pu	✓	RW	Real
57	**InertiaAccelGain** Sets the acceleration gain for the Inertia Compensation function. A value of 1 produces 100% compensation.	Default: Min/Max:	1.0000 1.0000/2.0000	✓	RW	Real
58	**InertiaDecelGain** Sets the deceleration gain for the Inertia Compensation function. A value of 1 produces 100% compensation.	Default: Min/Max:	1.0000 1.0000/2.0000	✓	RW	Real
59	**Inertia Trq Add** The torque reference output generated by the inertia compensator. This torque level is modified by Par 57 [InertiaAccelGain] and Par 58 [InertiaDecelGain]. A value of 1.0 represents rated torque of the motor.	Units: Default: Min/Max:	P.U. 1.0000 -/+8.0000 pu		RO	Real
60	**DeltaSpeedScale** Multiplier in the Inertia Compensation function - affects the value of Par 59 [Inertia Trq Add]. Use in center winder and unwind applications to compensate for roll diameter build-up.	Default: Min/Max:	1.0000 -/+1000.0000	✓	RW	Real
61	**Virt Encoder EPR** Equivalent Edges Per Revolution (EPR) or line count of a virtual encoder. A virtual encoder is a position reference whose input comes from speed reference. It accumulates pulses at the same rate as a real encoder of identical Pulses Per Revolution (PPR). Enter the equivalent PPR. For example: enter 1024 PPR to match an encoder with 1024 EPR.	Units: Default: Min/Max:	EPR 4096 10/67108864		RW	32-bit Integer

No.	Name Description	Values		Linkable	Read-Write	Data Type
62	**Virt Encdr Posit** A 32 bit pulse accumulator of the virtual encoder. The accumulated pulse count is equivalent to the hardware accumulator of a real encoder. It accumulates at a rate of 4x the value placed in Par 61 [Virt Encoder EPR]. The accumulator starts at zero upon position enable.	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
63	**Virt Encdr Dlyed** One sample period delayed output of Par 62 [Virt Encdr Posit]. Used in some applications to phase synchronize position reference through SynchLink. The master is delayed one sample while the downstream drives update their position references – then all drives sample position simultaneously. The downstream drives do not select a delay.	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
64	**FricComp Spd Ref** Supplies a speed input to the Friction Compensation algorithm. This input is normally a speed reference from a motion planner or ramped speed reference. It will trigger a torque feed forward response depending on its value.	Units: Default: Min/Max:	RPM 0.0000 -/+8.0000 pu	✓	RW	Real
65	**FricComp Setup** Enter or write a value to configure the friction compensation algorithm. This is a packed word of 3 digits. Each digit has a possible selection of 10 levels. • The least significant digit sets the speed threshold in intervals of 0.0005 pu speed. • The next (middle) digit sets the hysteresis band for the "units" digit in intervals of 0.0005 pu velocity. • The most significant digit sets the number of time steps from stick to slip, each step is 0.002 sec. Example: Value = 524 means: 5 time steps between stick and slip, each of 0.002 sec. duration, 2 counts of hysteresis or 0.001 pu_speed (each count is 0.0005 pu speed), and 4 counts or 0.002 pu_speed is the trigger threshold (each count is 0.0005 pu speed).	Default: Min/Max:	325 0/999	✓	RW	16-bit Integer
66	**FricComp Stick** The torque needed to break away from zero speed. By nature of friction, the break away sticktion will always be greater than the running friction.	Units: Default: Min/Max:	P.U. 0.1500 0.0000/8.0000	✓	RW	Real
67	**FricComp Slip** The torque level to sustain very low speed – once "break away" has been achieved. By nature of friction, viscous friction will always be less than sticktion.	Units: Default: Min/Max:	P.U. 0.1000 0.0000/8.0000	✓	RW	Real
68	**FricComp Rated** The torque needed to keep the motor running at base speed and with no process loading. The friction compensation algorithm assumes a linear or viscous component of friction between Par 67 [FricComp Slip] and Par 68 [FricComp Rated].	Units: Default: Min/Max:	P.U. 0.2000 0.0000/8.0000	✓	RW	Real
69	**FricComp Trq Add** The torque reference output of the Friction Compensation function. A value of 1.0 represents rated torque of the motor.	Units: Default: Min/Max: Scale:	P.U. 0.0000 -/+8.0000 pu Motor P.U. Torque		RO	Real
71	**Filtered SpdFdbk** Displays the motor speed feedback value output from the feedback Lead/Lag filter.	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+14112.0000 Par 4 [Motor NP RPM] = 1.0 pu		RO	Real
72	**Scaled Spd Fdbk** Displays the product of the speed feedback and Par 73 [Spd Fdbk Scale]. This parameter is for display only.	Default: Min/Max: Scale:	0.0000 -/+2200000000.0000 Par 4 [Motor NP RPM] = 1.0 pu		RO	Real
73	**Spd Fdbk Scale** A user-adjustable scale factor (multiplier) for speed feedback. It is multiplied with speed feedback to produce Par 72 [Scaled Spd Fdbk].	Default: Min/Max:	1.0000 -/+2200000000.0000	✓	RW	Real
74	**Atune Spd Ref** Sets the maximum speed of the motor during the Flux current and inertia tests.	Units: Default: Min/Max: Scale:	RPM 0.8500 0.1000/1.0000 Par 4 [Motor NP RPM] = 1.0 pu		RW	Real
75	**Rev Speed Limit** Sets a limit on the speed reference in the negative direction. This value can be entered as a negative value or zero.	Units: Default: Min/Max:	RPM -1.2500 -8.0000/0.0000		RW	Real
76	**Fwd Speed Limit** Sets a limit on the speed reference in the positive direction. This value can be entered as a positive value or zero.	Units: Default: Min/Max:	RPM 1.2500 0.0000/8.0000		RW	Real

No.	Name Description	Values		Linkable	Read-Write	Data Type
77	**Spd Ref TP Sel** Enter or write a value to select speed reference data displayed in Par 79 [Spd Ref TP Data] and Par 78 [Spd Ref TP RPM]. Note: The values for options 7, 8, & 9 were changed to "Reserved" for firmware version 2.04.	Default: Options:	0 = "Zero" 0 = "Zero" 1 = "User Ref" 2 = "Logic Select" 3 = "Lgc Sel Ref" 4 = "Ramp Spd Ref" 5 = "Ramp In" 6 = "Filt Spd Ref" 7 = "Reserved" 8 = "Reserved" 9 = "Reserved" 10 = "Amp Lim Stat" 11 = "Ramp Match" 12 = "S Crv Match" 13 = "S Array size" 14 = "S Array Indx" 15 = "Reserved" 16 = "Scl Ext Trim" 17 = "Trim FiltOut" 18 = "Ref w/Trim" 19 = "Amp Lim2 In" 20 = "Amp LimStat2" 21 = "Amp Lim2 Out" 22 = "FTD Ramp Out" 23 = "Reserved"			
78	**Spd Ref TP RPM** Displays the value selected in Par 77 [Spd Ref TP Sel] in RPM. This display should only be used if the selected value is floating point data.	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+8.0000 Par 4 [Motor NP RPM] = 1.0 pu		RO	Real
79	**Spd Ref TP Data** Displays the value selected in Par 77 [Spd Ref TP Sel]. This display should only be used if the selected value is integer data.	Default: Min/Max:	0 -/+32768		RO	16-bit Integer
81	**Spd Reg P Gain** Sets the proportional gain of the speed regulator. This value is automatically calculated based on the bandwidth setting in Par 90 [Spd Reg BW]. Proportional gain may be manually adjusted by setting Par 90 {Spd Reg BW] to a value of zero. Units are (per unit torque) / (per unit speed). Note: The Max. value was increased from 600.0000 for firmware version 3.01.	Default: Min/Max:	20.0000 0.0000/3000.0000	✓	RW	Real
82	**Spd Reg I Gain** Sets the integral gain of the speed regulator. This value is automatically calculated based on the bandwidth setting in Par 90 [Spd Reg BW]. Integral gain may be manually adjusted by setting Par 90 [Spd Reg BW] to a value of zero. Units are (per unit torque/sec) / (per unit speed).	Units: Default: Min/Max:	/Sec 50.0000 0.0000/100000.0000	✓	RW	Real
84	**SpdReg AntiBckup** By setting this parameter to 0.3, the drive will not over shoot to a step response. This parameter has no affect on the drive's response to load changes. The recommended setting is 0.1000 to 0.5000. Note: This parameter was changed to non-linkable for firmware version 3.01.	Default: Min/Max:	0.0000 0.0000/0.5000		RW	Real
						
85	**Servo Lock Gain** Sets the gain of an additional integrator in the speed regulator. The effect of Servo Lock is to increase stiffness of the speed response to a load disturbance. It behaves like a position regulator with velocity feed forward, but without the pulse accuracy of a true position regulator. The units of Servo Lock are rad/sec. Gain should normally be set to less than 1/3 speed regulator bandwidth, or for the desired response. Set to zero to disable Servo Lock.	Units: Default: Min/Max:	/Sec 0.0000 0.0000/300.0000	✓	RW	Real
86	**Spd Reg Droop** Specifies the amount of base speed that the speed reference is reduced when at full load torque. Use the droop function to cause the motor speed to decrease with an increase in load. The units are per unit speed / per unit torque.	Units: Default: Min/Max:	P.U. 0.0000 0.0000/0.2500	✓	RW	Real
87	**SReg Trq Preset** When the drive is not enabled, this parameter presets integrator output Par 101 [SpdReg Integ Out] to a specified torque level. This ensures that the torque command will be at the preset value when the drive is enabled and run. Par 153 [Control Options], bit 18 [SpdRegPreset] = 0, enables this preset.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu	✓	RW	16-bit Integer

No.	Name Description	Values		Linkable	Read-Write	Data Type
89	**Spd Err Filt BW** Sets the bandwidth of a 2nd order Butterworth low pass filter, which reduces quantization noise. The units are rad/sec. A value of 0 will disable the filter. The value should be greater than 5 times the value of Par 90 [Spd Reg BW]. Note: The default value for this parameter was changed from 200.0000 to 700.0000 for firmware version 2.03.	Units: Default: Min/Max:	R/S 700.0000 0.0000/2000.0000	✓	RW	Real
90	**Spd Reg BW** Sets the bandwidth of the speed regulator in rad/sec. Bandwidth is also referred to as the crossover frequency. Small signal time response is approximately 1/BW and is the time to reach 63% of set point. A change to this parameter will cause an automatic update of Par 81 [Spd Reg P Gain] and Par 82 [Spd Reg I Gain]. To disable the automatic gain calculation, set this parameter to a value of zero.	Units: Default: Min/Max:	R/S 10.0000 0.0000/500.0000	✓	RW	Real
91	**Spd Reg Damping** Sets the damping factor of the drive's characteristic equation and factors in the calculation of the integral gain. A damping factor of 1.0 is considered critical damp. Lowering the damping will produce faster load disturbance rejection, but may cause a more oscillatory response. When Par 90 [Spd Reg BW] is set to zero, damping factor has no effect.	Default: Min/Max:	1.0000 0.5000/3.0000	✓	RW	Real
92	**SpdReg P Gain Mx** Places a limit on the maximum value of proportional gain in Par 81 [Spd Reg P Gain] and Par 104 [Srlss Spd Reg Kp]. When gains are automatically calculated, this parameter is necessary to limit the amplification of noise with increased inertia. Note: The Max. value was increased from 600.0000 for firmware version 3.01.	Default: Min/Max:	100.0000 0.0000/3000.0000	✓	RW	Real
93	**SRegFB Filt Gain** Sets the lead term for the speed feedback filter. Values greater than 1 will result in a lead function and values less than 1 will result in a lag function. A value of 1 will disable the filter.	Default: Min/Max:	1.0000 -5.0000/20.0000	✓	RW	Real
94	**SReg FB Filt BW** Sets the frequency for the Speed Feedback filter.	Units: Default: Min/Max:	R/S 35.0000 0.0000/3760.0000	✓	RW	Real
95	**SRegOut FiltGain** Sets the lead term for the Speed Regulator output filter. Values greater than 1 will result in a lead function and values less than 1 will result in a lag function. A value of 1 will disable the filter. Note: The default value for this parameter was changed from 0.7000 to 1.0000 for firmware version 2.03.	Default: Min/Max:	1.0000 -/+5.0000	✓	RW	Real
96	**SReg Out Filt BW** Sets the frequency for the Speed Regulator output filter.	Units: Default: Min/Max:	R/S 30.0000 0.0000/3760.0000	✓	RW	Real
97	**Act Spd Reg BW** Displays the actual speed regulator bandwidth or crossover frequency. The value represents the bandwidth in Par 90 [Spd Reg BW] after the maximum bandwidth limits have been applied.	Units: Default: Min/Max:	R/S 10.0000 0.0000/500.0000		RO	Real
98	**Slip RPM @ FLA** Sets the amount of compensation to drive output at motor full load current (FLA). Note: This parameter was added for firmware version 2.03.	Units: Default: Min/Max:	RPM Based on [Motor NP RPM] 0.0/1200.0 RPM	✓	RW	16-bit Integer
99	**Slip Comp Gain** Sets the response time of slip compensation. Note: This parameter was added for firmware version 2.03.	Units: Default: Min/Max:	R/S 40.0 1.0/100.0	✓	RW	16-bit Integer
100	**Speed Error** The error (difference) between the motor speed reference (+) and the filtered motor speed feedback (-).	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+14112.0000 Par 4 [Motor NP RPM] = 1.0 pu		RO	Real
101	**SpdReg Integ Out** The output value of the Speed Regulator Integral channel.	Units: Default: Min/Max: Scale:	P.U. 0.0000 -/+8.0000 pu 1.0 PU Torque		RO	Real
102	**Spd Reg Pos Lim** Sets the positive limit of the Speed Regulator output value. The output of the Speed Regulator is limited by adjustable high and low limits.	Units: Default: Min.Max: Scale:\	P.U. 3.0000 0.0000/6.0000 Par 4 [Motor NP RPM] = 1.0 pu	✓	RW	Real
103	**Spd Reg Neg Lim** Sets the negative limit of the Speed Regulator output value. The output of the Speed regulator is limited by adjustable high and low limits.	Units: Default: Min/Max: Scale:	P.U. -3.0000 -6.0000/0.0000 Par 4 [Motor NP RPM] = 1.0 pu	✓	RW	Real
104	**SrLss Spd Reg Kp** Sets the proportional gain of the Speed Regulator when sensorless motor speed feedback is used. This value is automatically calculated based on the bandwidth set in Par 106 [Srlss Spd Reg BW]. Proportional gain may be manually adjusted by setting Par 106 to zero. This gain setting has no units (per unit torque) / (per unit speed error).	Default: Min/Max:	8.0000 0.0000/200.0000	✓	RW	Real

No.	Name Description	Values		Linkable	Read-Write	Data Type
105	**SrLss Spd Reg Ki** Sets the integral gain of the Speed Regulator when sensorless motor speed feedback is used. This value is automatically calculated based on the bandwidth set in Par 106 [Srlss Spd Reg BW]. Integral gain may be manually adjusted by setting Par 106 to zero. Units are '/Sec' (per unit torque/sec) / (per unit speed error).	Units: Default: Min/Max:	/Sec 8.0000 0.0000/4095.8000	✓	RW	Real
106	**SrLss Spd Reg BW** Sets the bandwidth of the Speed Regulator when sensorless motor speed feedback is used. Bandwidth is also referred to as the crossover frequency. Small integral time response is approximately 1/BW and is the time to reach 63% of set point. A change to this parameter will cause an automatic update of Par 104 [Srlss Spd Reg Kp] and Par 105 [Srlss Spd Reg Ki]. To disable the automatic gain calculation, set this parameter to zero.	Units: Default: Min/Max:	R/S 10.0000 0.0000/30.0000	✓	RW	Real
107	**Slip RPM Meter** Displays the present amount of adjustment being applied as slip compensation. Note: This parameter was added for firmware version 2.03.	Units: Default: Min/Max:	RPM 0.0 +/- 3000.0		RO	16-bit Integer
108	**Spd Reg TP Sel** Enter or write a value to select Speed Regulator data displayed in Par 109 [Spd Reg TP Data]. Note: The values for options 10 & 11 were changed to "Reserved" for firmware version 2.04.	Default: Options:	0 = "Zero" 0 = "Zero" 1 = "Iq Rate BW" 2 = "Reserved" 3 = "PGain Max BW" 4 = "BW Limit" 5 = "InertiaMaxBW" 6 = "BW Lim Stat" 7 = "BW Select" 8 = "Totl Inertia" 9 = "Tl Lim Stat" 10 = "Reserved" 11 = "Reserved" 12 = "I Rate Limit" 13 = "I RtLim Stat" 14 = "PGain Max" 15 = "GnMx LimStat" 16 = "Damping" 17 = "Dmp Lim Stat" 18 = "Reserved" 19 = "Srls KpMxBW" 20 = "Srls BWLimit" 21 = "SrlsInrtMxBW" 22 = "SrlsBWSelect" 23 = "Srls BW Calc" 24 = "Snsr BW Calc" 25 = "Reserved" 26 = "Reserved" 27 = "Spd FiltOut" 28 = "Servo Lock" 29 = "Spd+ServLock" 30 = "Prop Output" 31 = "Intg Input" 32 = "Scld Int Pre" 33 = "Sel Int Pre" 34 = "Droop Output" 35 = "Out Lim Stat" 36 = "Intg Hold" 37 = "Srlss ZeroWe" 38 = "I GainParLim" 39 = "P GainParLim" 40 = "SrvLck ParLm" 41 = "AntiBkup PLm" 42 = "Droop ParLim" 43 = "Pos Lim Stat" 44 = "Neg Lim Stat" 45 = "Limiter Out" 46 = "Active Pgain" 47 = "Active Igain" 48 = "Reserved" 49 = "Reserved" 50 = "Reserved' 51 = "Reserved" 52 = "Reserved" 53 = "Reserved"			
109	**Spd Reg TP Data** Displays the data selected by Par 108 [Spd Reg TP Sel].	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu		RO	Real
110	**Speed/TorqueMode** Selects the source for the drive torque reference. Note: Values 7 & 8 were added for firmware version 3.01.	Default: Options:	1 = "Speed Reg" 0 = "Zero Torque" 1 = "Speed Reg" 2 = "Torque Ref" 3 = "Min Spd/Trq" 4 = "Max Spd/Trq" 5 = "Sum Spd/Trq" 6 = "AbsMnSpd/Trq" 7 = "SLAT Minimum" 8 = "SLAT Maximum"			
111	**Torque Ref 1** Supplies an external motor torque reference to the drive. This parameter is divided by the value in Par 112 [Torq Ref1 Div]. A value of 1.0 represents rated torque of the motor.	Default: Min/Max: Scale:	0.0000 -/+2200000000.0000 1.0 Rated Motor Torque	✓	RW	Real
112	**Torque Ref1 Div** Par 111 [Torque Ref 1] is divided by this number. Use this parameter to scale the value of Par 111 [Torque Ref 1].	Default: Min/Max:	1.0000 -/+2200000000.0000	✓	RW	Real
113	**Torque Ref 2** Supplies an external motor torque reference to the drive. This parameter is multiplied by the value in Par 114 [Torq Ref2 Mult]. A value of 1.0 represents rated torque of the motor.	Default: Min/Max: Scale:	0.0000 -/+2200000000.0000 1.0 Rated Motor Torque	✓	RW	Real
114	**Torque Ref2 Mult** Par 113 [Torque Ref 2] is multiplied by this number. Use this parameter to scale the value of Par 113 [Torque Ref 2].	Default: Min/Max:	1.0000 -/+2200000000.0000	✓	RW	Real
115	**Torque Trim** The amount added to Par 111 [Torque Ref 1] and Par 113 [Torque Ref 2] before the Speed/Torque Mode Selector. A value of 1.0 represents rated torque of the motor.	Units: Default: Min/Max: Scale:	P.U. 0.0000 -/+8.0000 pu 1.0 Rated Motor Torque	✓	RW	Real
116	**Torque Step** The amount added to the selected Torque Reference before notch filtering or limits are applied. A value of 1.0 represents rated torque of the motor.	Units: Default: Min/Max: Scale:	P.U. 0.0000 -/+8.0000 pu 1.0 Rated Motor Torque	✓	RW	Real

No.	Name Description	Values		Linkable	Read-Write	Data Type
117	**NotchAttenuation** Sets the depth for the Notch Filter. Attenuation is the ratio of the output to the input at the notch frequency. An attenuation of 30 means that the notch output is 1/30th of the input at the specified frequency. Calculation: Attenuation = Input / Output  	Default: Min/Max:	50 0/500	✓	RW	Real
118	**Notch Filt Freq** The center frequency for Notch filter. To disable, set for zero (0).	Units: Default: Min/Max:	Hz 0.0000 0.0000/500.0000	✓	RW	Real
119	**SLAT ErrorSetpnt** Determines the RPMs at which the drive will switch from speed mode to the Speed Limited Adjustable Torque (SLAT) min. or SLAT max. mode, identified in Par 110 [Speed/Torque Mode] bit 7 “SLAT Minimum” or bit 8 “SLAT Maximum”. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	RPM 0.005 0.0/0.1	✓	RW	Real
120	**SLAT Dwell Time** SLAT control dwell time. The time in seconds that the drive can be above the error setpoint in Par 119 [SLAT ErrorSetpnt] before returning to the SLAT min. or SLAT max. mode. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	Sec 0.0 0.0/2.0	✓	RW	Real
123	**Trq PosLim Actl** Sets the internal torque limit for positive torque reference values. The positive internal motor torque will not be allowed to exceed this value.	Units: Default: Min/Max:	P.U. 1.0 0.0/8.0		RO	Real
124	**Trq NegLim Actl** Sets the internal torque limit for negative torque reference values. The internal negative motor torque will not be allowed to exceed this value.	Units: Default: Min/Max:	P.U. -1.0 -8.0/0.0		RO	Real
125	**Torque Pos Limit** Sets the external torque limit for positive torque reference values. The external positive motor torque will not be allowed to exceed this value.	Units: Default: Min/Max:	P.U. 2.0000 0.0000/8.0000	✓	RW	Real
126	**Torque Neg Limit** Sets the external torque limit for negative torque reference values. The external negative motor torque will not be allowed to exceed this value.	Units: Default: Min/Max:	P.U. -2.0000 -8.0000/0.0000	✓	RW	Real
127	**Mtring Power Lim** Sets the maximum motoring (positive) power of the drive. This can be calculated by multiplying the desired maximum motor torque and the maximum motor speed. A value of 1.0 = nominal motor power.	Units: Default: Min/Max:	P.U. 8.0000 0.0000/8.0000	✓	RW	Real
128	**Regen Power Lim** Sets the maximum regenerative (negative) power of the drive. This can be calculated by multiplying the desired maximum motor torque and the maximum motor speed. A value of 1.0 = nominal motor power. Note: The default value for this parameter was changed from -1.0000 to -0.5000 for firmware version 2.03.	Units: Default: Min/Max:	P.U. -0.5000 -8.0000/0.0000	✓	RW	Real
129	**Atune Trq Ref** Sets the motor torque that is applied to the motor during the flux current and inertia tests. Note: The minimum value for this parameter was changed from 0.2500 to 0.2000 for firmware version 2.03.	Units: Default: Min/Max: Scale:	P.U. 0.50 0.2/1.0 1.0 = P.U. Motor to Torque		RW	Real

No.	Name Description	Values		Linkable	Read-Write	Data Type
130	**Trq Ref TP Sel** Enter or write a value to select torque reference data displayed in Par 131 [Trq Ref TP Data]. Note: The value for option 5 was changed to "Reserved" for firmware version 2.04.	Default: Options:	0 = "Zero" 0 = "Zero" 16 = "Neg Lim Src" 1 = "Scale Output" 17 = "MPwr Par Lim" 2 = "Spd Torque" 18 = "RPwr Par Lim" 3 = "Trq Mode Out" 19 = "+Trq ParLim" 4 = "Actv TrqMode" 20 = "-Trq ParLim" 5 = "Reserved" 21 = "Nom Bus Volt" 6 = "Trq En Input" 22 = "Bus Volt Hys" 7 = "NotchFiltOut" 23 = "Bus Reg Ref" 8 = "NotchFilt In" 24 = "Bus Reg Err" 9 = "Trq Lim In" 25 = "Bus Reg Intg" 10 = "Bus Reg Out" 26 = "BusReg Clamp" 11 = "Pos Pwr Lim" 27 = "BusRegOutput" 12 = "Neg Pwr Lim" 28 = "IAA Filt Out" 13 = "Pos Atun Trq" 29 = "IAA dVf/dt" 14 = "Neg Atun Trq" 30 = "MC Trq Lim" 15 = "Pos Lim Src" 31 = "IqActlTrqLim"			
131	**Trq Ref TP Data** Displays the data selected by Par 130 [Trq Ref TP Sel].	Units: Default: Min/Max: Scale:	P.U. 0.0 -/+8.0 pu 1.0 = P.U. Motor to Torque		RO	Real
132	**Inert Adapt Sel** Configures the Inertia Adaptation Algorithm (IAA Function). • Bit 0 [Inrtia Adapt] when set to 1 (on), the Inertia Adaptation function will effect enhanced stability, higher bandwidths and dynamic stiffness. Useful when systems with a gear-box becomes disconnected from the load. Also used with motors that have very little inertia that otherwise lack dynamic stiffness, even at high bandwidths. • Bit 1 [Load Est] when set to 1 (on), the Load Estimate option removes or greatly reduces load disturbances and gives quicker system response. • Bit 2 [First Diff] selects the first difference feedback for Inertia Adaptation. Notes: When setting both Bit 0 & 1, stability is enhanced and load disturbances are removed. Bit 2 [First Diff] was added for firmware version 3.01.					
133	**Inert Adapt BW** This parameter sets the bandwidth of the Inertia Adaptation function when the IAA function is selected (Par 132 [Inert Adapt Sel], bit 0 = 1). Typical IAA bandwidths range from 70 to 150 rad/sec with 100 rad/sec nominal best. If the Load Estimate function is selected (Par 132 [Inert Adapt Sel], bit 0 = 1), then this parameter sets the natural frequency of a filter in rad/sec. Typical values range from 10 to 150 rad/sec with higher values being more responsive to disturbances but with increased system noise. There is no nominal best value, but 40 rad/sec is a suggested starting point. This adjustment may not function well in 'sloppy' geared systems. If both Inertia Adaptation and Load Estimate functions are active, use a bandwidth setting of 100 rad/sec.	Units: Default: Min/Max:	R/S 100.0000 10.0000/250.0000	✓	RW	Real
134	**Inert Adapt Gain** This parameter sets a multiplier of system inertia when the Inertia Adaptation function is selected (Par 132 [Inert Adapt Sel], bit 0 = 1). Higher values may cause high frequency ringing, while smaller values may cause fundamental load instability. A typical value is 0.5 This parameter has no affect on the Load Estimate function.	Default: Min/Max:	0.500 0.300/1.000	✓	RW	Real
136 137 138	**Skip Speed 1** **Skip Speed 2** **Skip Speed 3** Sets a frequency at which the drive will not operate. [Skip Speed 1 - 3] and Par 139 [Skip Speed Band] must not equal 0. Note: These parameters were added for firmware version 2.03.	Units: Default: Min/Max:	RPM 0.0 –/+30000.0	✓	RW	16-bit Integer
139	**Skip Speed Band** Determines the bandwidth around a skip frequency. [Skip Speed Band] is split, applying 1/2 above and 1/2 below the actual skip frequency. The same bandwidth applies to all skip frequencies. Note: This parameter was added for firmware version 2.03.	Units: Default: Min/Max:	RPM 0.0 0.0/1000.0	✓	RW	16-bit Integer

Options

	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	First Diff	Load Est	Inrtia Adapt
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values	Linkable	Read-Write	Data Type
145	**Hardware Present** Indicates if optional hardware is installed.				

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	DriveLogix	Stahl Fdbck	Reserved	TemposonFdbk	Resolver Brd	MDI Brd	Heidenhain	StegmannHiRs	2nd Encoder	Reserved	Reserved	SafeOff Brd	Reserved	SynchLinkBrd	Reserved	EmbeddedENET	DPI Comm Brd
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

0 = False
1 = True

No.	Name Description	Values	Linkable	Read-Write	Data Type
146	**FW TaskTime Sel** Sets the scan times for the drive firmware. Changing the firmware scan times will affect drive performance. Faster scan times may allow for higher bandwidth of the internal regulators. To achieve faster scan times some functions may need to be disabled. Only the most demanding application may benefit from faster scan times. Typically, adjusting this parameter is not needed, it is recommended you consult the factory before changing.	Default: 0 = "0.5 /2 /8ms" Options: 0 = "0.5 /2 /8ms" 1 = "0.25 /1 /2ms"		RW	16-bit Integer
147	**FW Functions En** Allows specific firmware functions to be disabled. When a bit is false, the associated function is disabled and all related parameters will be hidden. When a bit is true, the associated function is enabled and all related parameters will be displayed. Notes: Bits 18, 20, & 21 were changed to [Reserved] for firmware version 2.04. Bit 19 [MotinPlanner] and 24 [PhaseLockLp] were added for firmware version 3.01.				

Options	DvlpmntDeBug	Trending	Reserved	Peak Detect	Test Points	Reserved	Reserved	Phase LockLp	Sync Gener	PosWtch/Dtct	Reserved	Reserved	MotinPlanner	Reserved	Reserved	PositionCtrl	DI BitSwaps	Digital Outs	Analog Outs	Analog Ins	PF700S	Reserved	Reserved	Lim/Func Gen	Process Trim	Reserved	Speed Reg	Virt Encoder	FrictionComp	Inertia Comp	Spd Ref Ctrl	Spd Ref Sel
Default	1	1	0	1	1	0	0	0	1	1	0	0	0	0	0	0	1	1	1	1	1	0	0	1	1	0	1	1	1	1	1	1	
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

0 = False
1 = True

No.	Name Description	Values	Linkable	Read-Write	Data Type
148	**FW TaskTime Actl** Displays the actual firmware scan times selected by Par 146 [FW TaskTime Sel]. Before the change to the firmware scan time is accepted, the drive evaluates the change to ensure the processor will not be overloaded. If there is risk of overloading the processor, the change will not be accepted.	Default: 0 = "0.5 /2 /8ms" Options: 0 = "0.5 /2 /8ms" 1 = "0.5 /1 /8ms" 2 = "0.25 /1 /8ms" 3 = "0.25 /0.5 /8ms" 4 = "0.1/0.5 /8ms" 5 = "0.5/1 /2ms" 6 = "0.25 /1 /2ms" 7 = "0.25 /0.5 /2ms" 8 = "0.1/0.5 /2ms"		RO	16-bit Integer
149	**FW FunctionsActl** Displays the actual state of the firmware functions. If activating requested functions could overload the processor, the change to Par 147 [FW Functions En] will not be accepted. Note: Bit 19 [MotinPlanner] and 24 [PhaseLockLp] were added for firmware version 3.01				

Options	DvlpmntDeBug	Trending	Reserved	Peak Detect	Test Points	Reserved	Reserved	Phase LockLp	Sync Gener	PosWtch/Dtct	Posit Offset	Posit Motion	MotinPlanner	Posit Pt2Pt	Posit Direct	Posit Interp	DI BitSwaps	Digital Outs	Analog Outs	Analog Ins	Reserved	Reserved	Reserved	Lim/Func Gen	Process Trim	Reserved	Speed Reg	Virt Encoder	FrictionComp	Inertia Comp	Spd Ref Ctrl	Spd Ref Sel
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

0 = False
1 = True

No.	Name Description	Values	Linkable	Read-Write	Data Type
150	**Logic State Mach** Indicates the logical state of the drive. Value 0- Stopped indicates zero speed has been detected and the speed and torque regulators are disabled. Value 8 "Slip Test" indicates that the Slip Frequency Auto Tune test is in progress. Note: Value 8 "Slip Test" was added for firmware version 3.01.	Default: 0 = "Stopped" Options: 0 = "Stopped" 1 = "Starting" 2 = "Running" 3 = "Stopping" 4 = "Inertia Test" 5 = "MC Diag" 6 = "Test Done" 7 = "EnableHealth" 8 = "Slip Test"			

No.	Name Description	Values			Linkable	Read-Write	Data Type

151 **Logic Command**

The controller-drive interface (as defined by the Controller Communication Format) sets bits to enable and disable various functions and algorithms. Bits that are changed here are reflected in Par 152 [Applied LogicCmd].

Note: Bits 4 through 9 are NOT recalled from Control EEprom. They will be cleared upon drive powerup or following an EEprom recall operation.

Options	PI Trim Rst	PI Trim Hold	Position En	PI Trim En	Frict Comp	Inertia Comp	Ext Flt/Alm	Reserved	Reserved	SReg IntgRst	SReg IntgHld	SpdRamp Hold	Time Axis En	TachLoss Rst	Spd S Crv En	SpdRamp Dsbl
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

152 **Applied LogicCmd**

Displays the Logic Command that is applied to the Regulators and Control Algorithms within the drive. Logic Commands come from the 32-bit Logic Command found in a connection with the Logix Controller.

Note: Bits 7 & 8 were changed to [Reserved] for firmware version 2.04.

Options	Reserved	Spd Ref Sel2	Spd Ref Sel1	Spd Ref Sel0	Reserved	Reserved	Coast Stop	CurrLim Stop	Jog 2	Reserved	Reverse	Forward	Clear Fault	Jog 1	Start	Normal Stop	PI Trim Rst	PI Trim Hold	Position En	PI Trim En	Frict Comp	Inertia Comp	Ext Flt/Alm	Reserved	Reserved	SReg IntgRst	SReg IntgHld	SpdRamp Hold	Time Axis En	TachLoss Rst	Spd S Crv En	SpdRamp Dsbl
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

Speed Reference Select Inputs

Bit	30	29	28	
	Spd Ref Sel2	**Spd Ref Sel1**	**Spd Ref Sel0**	**Auto Reference Source**
	0	0	0	Speed Ref A Sel
	0	0	1	Speed Ref B Sel
	0	1	0	Preset Speed 2
	0	1	1	Preset Speed 3
	1	0	0	Preset Speed 4
	1	0	1	Preset Speed 5
	1	1	0	Preset Speed 6
	1	1	1	Preset Speed 7

To access Preset Speed 1, set parameter 27 [Speed Ref A Sel] or 28 [Speed Ref B Sel] to 5 -"Preset Spd 1."

No.	Name Description	Values	Linkable	Read-Write	Data Type
153	**Control Options** Set bits to configure the options for operating the drive. Note: Bit 3 [Flying Start] was added for firmware version 2.04. Bit 20, 21, and 29 were added for firmware version 3.01.				

Options	Reserved	Sys Inrt En	Slip Test En	PM Offset En	Pwr Diag En	Trq Trim En	MC Atune En	Time Axis En	PITrim EnOut	Reserved	Inrt TrqLPEn	Motor OL Ret	Slip Comp	SpdRegPreset	Aux Pwr Sply	Auto Tach Sw	Reserved DM	Reserved DM	OL ClsLpDsbl	Jog -NoInteg	Iq Delay	Motor Dir	Reserved	3WireControl	Trq DsblZSpd	Trq StopRamp	Jog - NoRamp	Jog in Trq	Flying Start	SErrFilt1Stg	SRef LdLg En	Bipolar SRef	
Default	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

Bit	Name	Current Function
0	Bipolar SRef	When this bit is enabled a bipolar speed reference is used. In bipolar reference mode, Par 40 [Selected Spd Ref] indicates both the speed magnitude and the direction: Positive speed reference values (+) = forward direction and negative speed reference values (–) = reverse direction. When this bit is disabled a unipolar speed reference is used. In unipolar mode, the speed reference is limited to a minimum value of zero (0). In this case Par 40 [Selected Spd Ref] supplies only the speed magnitude. The direction is determined by Par 152 [Applied LogicCmd] bits 20 [Forward] and 21 [Reverse]. The forward/reverse direction button on the HIM is one possible source for the Applied Logic Command direction bits. The following chart explains the effect that the direction button on the HIM has based on the condition of the "Bipolar SRef" bit: Bipolar / Reference Controlled By HIM? / HIM Direction Button Enabled / Yes / Changes the motor direction due to a HIM supplied (+) or (-) command signal Enabled / No / Has no effect on motor direction. Direction determined by sign of Par 40 [Selected Spd Ref]. Disabled / Yes / Changes the motor direction due to a HIM supplied Forward or Reverse Logic Command bit. Disabled / No / Changes the motor direction due to a HIM supplied Forward or Reverse Logic Command bit. In either Bipolar or Unipolar mode, the selected direction can be determined from the sign of Par 41 [Limited Spd Ref]. Positive values indicate forward rotation and negative values indicate reverse rotation.
1	SRef LdLg En	Enables/disables the Speed Reference Lead Lag Filter
2	SErrFilt1Stg	Setting this bit will configure the speed error filter as a single first order low pass filter. Clearing this bit will configure the speed error filter as two cascaded first order low pass filters
3	Flying Start	Enables/disables the function which reconnects to a spinning motor at actual RPM when a start command is issued
4	Jog in Torq	Overrides Par 110 [Speed/TorqueMode] setting when a jog command is received
5	Jog-NoRamp	Bypasses the Speed Reference Ramp and S-Curve
6	Trq StopRamp	Overrides Par 110 [Speed/TorqueMode] setting when stopping
7	Trq DsblZSpd	Configures how the drive uses stop dwell time
8	3WireControl	Configures the drive for 3-wire control
10	Motor Dir	Changes direction of the motor rotation
11	Iq Delay	Enables the Torque Current Delay option
12	Jog-NoInteg	Configures the speed regulator's integrator to "hold" when jogging
13	OL ClsLpDsbl	Overload Closeloop Calculation Disable
14	Reserved DM	Reserved for use by the Drive module for "Invert Speed Feedback"
15	Reserved DM	Reserved for use by the Drive module for "Invert Motor Torque Current"
16	Auto Tach Sw	Switches to secondary motor feedback
17	Aux Pwr Sply	Enables the use of an auxiliary power supply. When set to 1, the Main Control Board (MCB) examines internal 12V DC power to see when it is energized. When set to 0, the MCB examines the voltage of the DC Bus. This bit enables the MCB and the DriveLogix Controller to remain energized when 3-Ø voltage is de-energized.
18	SpdRegPreset	When set to "1", this bit selects Par 303 [Motor Torque Ref] for the Speed Regulator preset. When set to "0", Par 87 [SReg Trq Preset] is selected.
19	Slip Comp	Enables slip compensation
20	Motor OL Ret	Enables motor over-load retention
21	Inrt TrqLPEn	Enables the Inertia Compensation Torque Output Low Pass Filter
23	PITrim EnOut	Enables the output of Process Trim
24	Time Axis En	Ramps the output of the Time Function Generator
25	MC Atune En	Enables Autotune tests
26	Trq Trim En	Enables Torque Trim
27	Pwr Diag En	Enables the Power Diagnostic test
28	PM Offset En	Enables the Permanent Magnet Motor offset test
29	Slip Test En	Enables the Slip Frequency Auto-Tune function
30	Sys Inrt En	Enables the System Inertia test

No.	Name Description	Values		Linkable	Read-Write	Data Type
154	**Stop Dwell Time** Sets an adjustable delay time between detecting zero speed and disabling the speed and torque regulators, when responding to a stop command. For more information, please see Stop Dwell Time on page C-5. **Important:** Consult industry and local codes when setting the value of this parameter.	Units: Default: Min/Max:	Sec 0.0000 0.0000/10.0000	✓	RW	Real

155 **Logic Status**
Displays the status - condition of the drive.

Options	LogixPresent	Spd Ref Act2	Spd Ref Act1	Spd Ref Act0	Reserved	RunCommanded	Start Active	PositionMode	Speed Mode	Torque Mode	Hw Enable On	Spd Commis	MC Commis	MC Active	Above Setpt2	At Setpt 1	Enable On	At Setpt Spd	At Zero Spd	Tach Loss Sw	At Limit	Ready	Flash Mode	Alarm	Faulted	Jogging	Decelerating	Accelerating	Actual Dir	Command Dir	Running	Active
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

Bit	Name	Current Function
0	Active	Drive is controlling motor
1	Running	Run command received & controlling motor
2	Command Dir	Commanded direction is forward
3	Actual Dir	Actual motor direction is forward
4	Accelerating	Motor is increasing speed
5	Decelerating	Motor is decreasing speed
6	Jogging	Jog command received & controlling motor
7	Faulted	Exception event that causes a fault has occurred
8	Alarm	Exception event that causes an alarm has occurred
9	Flash Mode	Flash upgrade in progress
10	Ready	Enable input is high & drive is fault free
11	At Limit	Speed, Power, Current or Torque is being limited, refer to Par 304
12	Tach Loss SW	Failure is detected in primary speed or position feedback device & drive has switched to secondary device
13	At Zero Spd	Speed feedback is within limits defined in Par 160
14	At Setpt Spd	Speed feedback is within limits defined in Par 41 and Par 171

Bit	Name	Current Function
15	Enable On	
16	At Setpt 1	Par 172 value is within limits defined by Par 173 and Par 174
17	Above Setpt 2	Par 175 value is within limits defined by Par 176 and Par 177
18	MC Active	Drive is controlling motor (same as enabled)
19	MC Commis	Motor control commissioning in progress
20	Spd Commis	Speed control commissioning in progress
21	Hw Enable On	
22	Torque Mode	Par 110 value is 2, 3, 4, 5 or 6
23	Speed Mode	Par 110 value is 1 & position control is not enabled
24	Position Mode	Position control active & *Par 110* value is not 2, 3, 4, 5 or 6
25	Start Active	Start command received & controlling motor
26	Command Run	Run command received
28-30	Spd Ref Act1-3	
31	LogixPresent	

156 **Start Inhibits**
Indicates which condition is preventing the drive from starting or running.
Note: Bit 18 [MC Config] was added to this parameter for firmware version 2.03.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	MC Config	Reserved	GateShutDown	PositFdbkSel	PM Mtr Fdbk	Motin Shtdwn	DigIn Config	Bus PreChrg	Encoder PPR	Jog	Start	Flash Upgrd	Power EE	Power Loss	SW I Lim Stp	SW Coast Stp	SW Ramp Stop	No Enable	Faulted
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

157 **Logic Ctrl State**
Indicates which logic control functions are enabled.
- Bit 22 [S Tst FulSpd] set to "1" indicates that the Slip Auto Tune function is active
- Bit 23 [Slip Test En] set to "1" indicates that the drive is at speed for the Auto Tune function.

Note: Bits 22 and 23 were added for firmware version 3.01.

Options	ProcsTrim En	Cmd Dir Upol	Lgx I/O Cnx	Lgx Run Mode	Reserved	VP Gate Enbl	MC Gate Enbl	Ramp Hold	Slip Test En	S Tst FulSpd	PM Offset Rq	Mtr Dir Req	Pwr Diag Req	MC Atune Req	FTD Ramp EN	MC En Req	RThru Flux	DC Brake En	Mtr Sim Mode	RThru Coast	CurrRef En	Forced Spd	Trq Ref En	Spd Reg En	SReg IntgHld	CurLim Stop	J Tst FulSpd	Inert Tst En	PositionEnbl	SRef SCrv En	SRef Ramp En	Spd Ref En
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values	Linkable	Read-Write	Data Type
158	**Drive Logic Rslt** This is the logic output of the logic parser that combines the outputs from the DPI ports and the DriveLogix controller to determine drive control based on the masks and owners. The control bits are reflected in Par 152 [Applied LogicCmd] bits 16-31.				

Options	Reserved	Spd Ref Sel2	Spd Ref Sel1	Spd Ref Sel0	Reserved	Reserved	Coast Stop	CurrLim Stop	Jog 2	Reserved	Reverse	Forward	Clear Fault	Jog 1	Start	Normal Stop	Reserved	Spd Ref Sel2	Spd Ref Sel1	Spd Ref Sel0	Reserved	Reserved	Coast Stop	CurrLim Stop	Jog 2	Reserved	Reverse	Forward	Clear Fault	Jog 1	Start	Normal Stop
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

159	**DigIn ConfigStat** This parameter indicates the status of the Digital Inputs.	Default: Options:	0 = "DigIn Ok" 0 = "DigIn Ok" 1 = "2 Run/Starts" 2 = "Start NoStop" 3 = "Run+Latched" 4 = "Strt+UnLatch" 5 = "2 Jog1's" 6 = "2 Jog2's" 7 = "2Fwd's/Rev's"			
160	**Zero Speed Lim** Establishes a band around zero speed that is used to determine when the drive considers the motor to be at zero speed.	Units: Default: Min/Max: Scale:	RPM 17.6400 0.0000/882.0000 Par 4 [Motor NP RPM] = 1.0pu	✓	RW	Real
161	**Logic TP Sel** Enter or write a value to select logic status indication displayed in Par 162 [Logic TP Data].	Default: Options:	0 = "Zero" 0 = "Zero" 1 = "Avg Spd Ref" 2 = "Avg Spd Fdbk" 3 = "LastStopMode" -(0=None) -(1=Coast) -(2=Current Limit) -(3=Ramp) -(4=Torque Mode) 4 = "Spd Ref Sel" 5 = "Start State" 6 = "Run State" 7 = "Stop State" 8 = "PrChrg Logic" 9 = "Meas State" 10 = "Data State" 11 = "Diag State" 12 = "MC CalcState" 13 = "Task 1 time" 14 = "Task 1 max" 15 = "Task 2 time" 16 = "Task 2 max" 17 = "Task 3 time" 18 = "Task 3 max" 19 = "BkGnd Time" 20 = "BkGnd Max" 21 = "Task 1 %" 22 = "Task 2 %" 23 = "Task 3 %" 24 = "BkGnd %" 25 = "RThru State" 26 = "RThru Timer" 27 = "Health State" 28 = "Sys Friction" 29 = "Iq proc time" 30 = "Enable Inhib" 31 = "DI Src Index" 32 = "DI SrcRevIdx" 33 = "DI TrendTrig" 34 = "DI Prchg Ena" 35 = "Enable State" 36 = "LID Revision" 37 = "DI MOP Incr" 38 = "DI MOP Decr" 39 = "DI MOP Reset" 40 = "Cmd Term Blk" 41 = "Cmd DPI 1" 42 = "Cmd DPI 2" 43 = "Cmd DPI 3" 44 = "Cmd DPI 4" 45 = "Cmd DPI 5" 46 = "Cmd DPI 6" 47 = "Cmd ELC" 48 = "Cmd Debugger" 49 = "Reserved" 50 = "SelSw Posit" 51 = "DI SelSw 00" 52 = "DI SelSw 01" 53 = "DI SelSw 02" 54 = "DI SelSw 03"			
162	**Logic TP Data** Displays the indication selected by Par 161 [Logic TP Sel].	Default: Min/Max:	0.0000 -/+2200000000.0000		RO	Real
163	**Stop Oper TP Sel** Enter or write a value to select data displayed in Par 164 [StpOper TPData] at the time of the last initiated stop.	Default: Options:	0 = "Zero" 0 = "Zero" 1 = "Logic State" 2 = "Logic Input" 3 = "Lcl In State" 4 = "Logic Status" 5 = "Run Inhibit" 6 = "Logic Ctrl" 7 = "Mtr Ctrl Cmd" 8 = "Mtr Ctrl Ack" 9 = "Reserved" 10 = "Flt Status 1" 11 = "Flt Status 2" 12 = "Motor Speed" 13 = "Avg Spd Fdbk" 14 = "ZM1 Spd Fdbk" 15 = "Speed Ref" 16 = "Avg Spd Ref" 17 = "ZM1 Spd Ref" 18 = "SReg PI Out" 19 = "Trq Ref" 20 = "TrqRef Stat" 21 = "DC Bus Volts" 22 = "Motor Volts" 23 = "Mtr Current" 24 = "Motor Flux" 25 = "Motor Freq" 26 = "Motor Power" 27 = "Flt Status 3"			
164	**StopOper TP Data** Displays the data selected by Par 163 [Stop Oper TP Sel].	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer

No.	Name Description	Values		Linkable	Read-Write	Data Type
165	**Tune Test Status** Indicates which test (if any) is in progress. • Value 7 is retained and is used to continue the Auto Tune test from the last point at which it was stopped. Note" Option value 5 was changed to "Reserved" for firmware version 2.04. Value 7 "Mtr+Sys J" was changed to "Slip Test" for firmware version 3.01.	Default: Options:	0 = "None" 0 = "None" 1 = "MC Autotune" 2 = "Power Diag" 3 = "Motor Direct" 4 = "PM Offset" 5 = "Reserved" 6 = "Sys Inertia" 7 = "Slip Test"			
166	**Motor Ctrl Cmmd** Displays the command bits to the Motor Control Processor from the Velocity Processor.					

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Fault Reset	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Base Block	Reserved	Reserved	Torque Run	Flux Run	CP Enable
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values		Linkable	Read-Write	Data Type
167	**Motor Ctrl Ackn** Displays the Motor Control Processor's acknowledgment to the Velocity Processor for the Motor Control Command bits.					

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Fault Reset	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Power Diag	Precharge	Torque Run	Flux Run	CP Enable
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values		Linkable	Read-Write	Data Type
168	**Normal Stop Mode** Sets the method of stopping the drive when a stop command is given. Normal Stop command and the RUN input changing from true to false will command a Normal Stop. Ramp Stop = decelerates to zero speed at the decal rate CurLim Stop = Max torque / current applied until zero speed Coast Stop = power removed from motor, motor coasts to zero	Default: Options:	0 = "Ramp Stop" 0 = "Ramp Stop" 1 = "CurLim Stop" 2 = "Coast Stop"			
169	**SrLss ZeroSpdLim** Functionally equivalent to Par 160 [Zero Speed Lim], but is used exclusively in Sensorless speed mode. The value is automatically set from Par 3 [Motor NP Hertz], Par 4 [Motor NP RPM] or Par 7 [Motor Poles]. The automatic setting corresponds to the rated slip speed of the motor (synchronous speed - nameplate speed). The value can be manually set.	Units: Default: Min/Max:	RPM 49.9975 0.0000/875.0000	✓	RW	Real
170	**Flying StartGain** This parameter is currently not used. Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	4000 0/32767		RW	16-bit Integer
171	**Set Speed Lim** Creates a tolerance - hysteresis band around the value in Par 41 [Limited Spd Ref] for comparison to average speed feedback. The comparison controls bit 14 [At Setpt Spd] of Par 155 [Logic Status]. In general bit 14 [At Setpt Spd] turns on when the feedback is within the tolerance of the reference. • Turn-on level for rising feedback = Limited Spd Ref - Limit. • Turn-off level for rising feedback = Limited Spd Ref + 2(Limit). • Turn-on level for falling feedback = Limited Spd Ref + Limit. • Turn-off level for falling feedback = Limited Spd Ref - 2(Limit).	Units: Default: Min/Max: Scale:	RPM 17.6400 0.0000/882.0000 Par 4 [Motor NP RPM] = 1.0pu	✓	RW	Real
172	**Setpt 1 Data** Provides data for comparison to Par 173 [Setpt1 TripPoint], driving bit 16 [At Setpt 1] of Par 155 [Logic Status]. For more information, please see Setpt 1 Data on page C-6.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu	✓	RW	Real
173	**Setpt1 TripPoint** Provides the midpoint for operation of bit 16 [At Setpt 1] of Par 155 [Logic Status].	Units: Default: Min/Max:	P.U. 0.1000 -/+8.0000 pu	✓	RW	Real
174	**Setpt 1 Limit** Creates a tolerance - hysteresis band around the value in Par 173 [Setpt1 TripPoint]. • Turn-on level for ascending data = TripPoint - Limit. • Turn-off level for ascending data = TripPoint + 2(Limit). • Turn-on level for descending data = TripPoint + Limit. • Turn-off level for descending data = TripPoint - 2(Limit).	Units: Default: Min/Max:	P.U. 0.0100 0.0000/0.5000	✓	RW	Real
175	**Setpt 2 Data** Provides data for comparison to Par 177 [Setpt2 TripPoint], driving bit 17 [Above Setpt 2] of Par 155 [Logic Status]. For more information, please see Setpt 2 Data on page C-6.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu	✓	RW	Real
176	**Setpt2 TripPoint** Provides the midpoint for operation of bit 16 [At Setpt 1] of Par 155 [Logic Status].	Units: Default: Min/Max:	P.U. 0.2000 -/+8.0000 pu	✓	RW	Real

No.	Name Description	Values		Linkable	Read-Write	Data Type
177	**Setpt 2 Limit** Creates a tolerance - hysteresis band around the value in Par 176 [Setpt2 TripPoint]. For positive setpoints: • Turn-on level = TripPoint • Turn-off level = TripPoint - Limit. For negative setpoints: • Turn-on level = TripPoint • Turn-off level = TripPoint + Limit.	Units: Default: Min/Max:	P.U. 0.0100 0.0000/0.5000	✓	RW	Real
178	**PI TP Sel** Enter or write a value to select Process Control PI data displayed by Par 179 [PI TP Data]. The values for options 1 & 8 were changed to "Reserved" for firmware version 2.04.	Default: Options:	0 = "Zero" 0 = "Zero" 1 = "Reserved" 2 = "LPF Output" 3 = "P Gain Term" 4 = "Reg Output" 5 = "On Intg Lim" 6 = "On Out Limit" 7 = "Status Hold" 8 = "Reserved" 9 = "Reset Status" 10 = "Time Axis En" 11 = "Enbl Status" 12 = "Out Max Lim" 13 = "Out Min Lim"			
179	**PI TP Data** Displays the data selected by Par 178 [PI TP Sel].	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu		RO	Real
180	**PI Output** The final output of the Process Control regulator. A value of 1 can represent either base motor speed, motor rated torque, or 100% for some external function.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu		RO	Real
181	**PI Reference** The reference input for the process control regulator. A value of 1 can represent either base motor speed, motor rated torque, or 100% for some external function.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu	✓	RW	Real
182	**PI Feedback** The feedback input for the process control regulator. A value of 1 can represent either base motor speed, motor rated torque, or 100% for some external function.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu	✓	RW	Real
183	**PI Error** Displays the error of the process trim reference minus the process trim feedback.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu		RO	Real
184	**PI Lpass Filt BW** Sets the bandwidth of a single pole filter applied to the error input of the Process Control regulator. The input to the filter is the difference between Par 181 [PI Reference] and Par 182 [PI Feedback]. The output of this filter is used as the input to the process control regulator.	Units: Default: Min/Max:	R/S 0.0000 0.0000/500.0000	✓	RW	Real
185	**PI Preload** Presets the integrator of the Process Control regulator.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu	✓	RW	Real
186	**PI Prop Gain** Controls the proportional gain of the Process Control regulator. If the proportional gain is 1.0, the regulator output equals 1 pu for 1 pu error.	Default: Min/Max:	8.0000 0.0000/200.0000	✓	RW	Real
187	**PI Integ Time** Controls the integral gain of the Process Control regulator. If the integrator time is 1.0, the regulator output equals 1 pu in 1 second for 1 pu error.	Units: Default: Min/Max:	/Sec 8.0000 0.0000/4000.0000	✓	RW	Real
188	**PI Integ HLim** The high limit of the integral gain channel for the Process Control regulator. A value of 1 can represent either base motor speed, motor rated torque, or 100% for some external function.	Units: Default: Min/Max:	P.U. 0.1000 0.0000/8.0000	✓	RW	Real
189	**PI Integ LLim** The low limit of the integral gain channel for the Process Control regulator. A value of 1 can represent either base motor speed, motor rated torque, or 100% for some external function.	Units: Default: Min/Max:	P.U. -0.1000 -8.0000/0.0000	✓	RW	Real
190	**PI Integ Output** Displays the output value of the integral channel of the Process Control regulator. A value of 1 can represent either base motor speed, motor rated torque, or 100% for some external function.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu		RO	Real
191	**PI High Limit** The high limit of the Process Control regulator output. A value of 1 can represent either base motor speed, motor rated torque, or 100% for some external function.	Units: Default: Min/Max:	P.U. 0.1000 0.0000/8.0000	✓	RW	Real
192	**PI Lower Limit** The low limit of the Process Control regulator output. A value of 1 can represent either base motor speed, motor rated torque, or 100% for some external function.	Units: Default: Min/Max:	P.U. -0.1000 -8.0000/0.0000	✓	RW	Real
196	**ParamAccessLevel** The value of this parameter establishes the level of parameter access for the Human Interface Module (HIM). • Value 0 - Basic grants access to the minimum number of parameters • Value 1 - Advanced grants access to a larger group of parameters	Default: Options:	0 = "Basic" 0 = "Basic" 1 = "Advanced"		RW	16-bit Integer
202	**Time Axis Rate** Sets rate (1/sec) for the Time Function Generator to ramp from an output of 0 to 1 and from 1 to 0.	Units: Default: Min/Max:	/Sec 1.0000 0.0100/20.0000	✓	RW	Real

No.	Name Description	Values		Linkable	Read-Write	Data Type
203	**Time Axis Output** The output of the Time Function Generator. When the Time Function Generator is enabled by Par 151 [Logic Command] bit 3 [Time Axis En], or Par 153 [Control Options], bit 24 [Time Axis En], the value of this parameter ramps from 0 to 1 at a rate determined by Par 202 [Time Axis Rate]. Conversely, when the Time Function Generator is disabled, the value of this parameter ramps from 1 to 0.	Default: Min/Max:	0.0000 0.0000/1.0000		RO	Real
204	**LimGen Y axis Mx** Sets Par 207 [Limit Gen Hi Out] and Par 208 [Limit Gen Lo Out] when the absolute value of Par 206 [LimGen X axis In] is greater than or equal to 1.	Units: Default: Min/Max:	P.U. 0.2500 0.0000/8.0000	✓	RW	Real
205	**LimGen Y axis Mn** Sets Par 207 [Limit Gen Hi Out] and Par 208 [Limit Gen Lo Out] when the absolute value of Par 206 [LimGen X axis In] is equal to 0.	Units: Default: Min/Max:	P.U. 0.0500 0.0000/8.0000	✓	RW	Real
206	**LimGen X axis In** The X axis input to the Limit Generator. Typically this parameter is linked to a speed reference or to Par 203 [Time Axis Output].	Default: Min/Max:	0.0000 -/+8.0000 pu	✓	RW	Real
207	**Limit Gen Hi Out** Displays the positive output of the Limit Generator. When Par 206 [Limit Gen X axis In] is greater than or equal to 1, this value equals Par 204 [Limit Gen Y axis Mx]. When Par 206 [Limit Gen X axis In] is equal to 0, this value equals Par 205 [Limit Gen Y axis Mn]. For values of X Axis input between 0 and 1, the value of this parameter is interpolated from Y axis min. and max. values. Typically it is linked to Par 188 [PI Integ HLim].	Units: Default: Min/Max:	P.U. 8.0000 0.0000/8.0000		RO	Real
208	**Limit Gen Lo Out** Displays the negative output of the Limit Generator. The value of this parameter is the negative of Par 207 [Limit Gen Hi Out]. Typically it is linked to Par 189 [PI Integ LLim].	Units: Default: Min/Max:	P.U. -8.0000 -8.0000/0.0000		RO	Real
210	**PeakDtct Ctrl In** Sets the configuration of the two peak/level detectors. • Peak detection (when "set" and "hold" are off) causes the output to capture the peak min./max. • The [Peak1SelHigh] and [Peak2SelHigh] bits determine if the peak/level detector is positive or negative. If the bit is set the detector detects positive peaks or levels above the preset. If the bit is not set the detector detects "valleys" or levels below the preset. The output shows the min. or max. peak. • The [Peal 1 Set] bit is used to reset the output to the value in Par 214 [PeakDtct1 Preset] (default 0). The [Peal 2 Set] bit is used to reset the output to the value in Par 218 [PeakDtct2 Preset] (default 0). • The [Peak 1 Hold] bit is used to hold the output at the present value in Par 214 [PeakDtct1 Preset]. The [Peak 2 Hold] bit is used to hold the output at the present value in Par 218 [PeakDtct2 Preset]. Options: Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Peak2SelHigh, Peak 2 Hold, Peak 2 Set, Reserved, Peak1SelHigh, Peak 1 Hold, Peak 1 Set Default: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 Bit: 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0 0 = False 1 = True					
211	**PeakDtct Status** Status of peak/level detectors. A peak detector sets its "Change" bit for one scan when it detects a peak. The" Change" bit is off when set or when the "Hold" bit is on. Options: Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Peak 2 Chng, Peak 1 Chng Default: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 Bit: 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0 0 = False 1 = True					
212	**PkDtct1 In DInt** Integer input to the first peak/level detector.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
213	**PkDtct1 In Real** Floating point input to the first peak/level detector.	Default: Min/Max:	0.0000 -/+22000000000.0000	✓	RW	Real
214	**PeakDtct1 Preset** The first detector (in set or hold modes) compares this value to its input for level detection. When the detector trips (in set mode) it transfers the value of this parameter to its output.	Default: Min/Max:	0.0000 -/+22000000000.0000	✓	RW	Real
215	**PeakDetect1 Out** Output from the first peak/level detector.	Default: Min/Max:	0.0000 -/+22000000000.0000		RO	Real
216	**PkDtct2 In DInt** Integer input to second peak/level detector.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
217	**PkDtct2 In Real** Floating point input to second peak/level detector.	Default: Min/Max:	0.0000 -/+22000000000.0000	✓	RW	Real

No.	Name Description	Values		Linkable	Read-Write	Data Type
218	**PeakDtct2 Preset** The second detector (in set or hold modes) compares this value to its input for level detection. When the detector trips (in set mode) it transfers the value of this parameter to its output.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
219	**PeakDetect2 Out** Output from the second peak/level detector.	Default: Min/Max:	0.00 0.00/1200.00		RO	Real
221	**Load Estimate** Displays the estimated load torque, which is the side effect of the speed observer and does not include torque to accelerate or decelerate the motor if the inertia input is correct. The value is provided for display purposes.	Units: Default: Min/Max:	P.U. 0.0 -/+8.0 pu		RO	Real
222	**Mtr Fdbk Sel Pri** Selects primary feedback device. The primary feedback device configuration must not be set to fault on an event in order to allow operational feedback switch over to the alternate feedback device set in Par 223 [Mtr Fdbk Alt Sel]. Notes: Par 485 [Motor Ctrl Mode] must be set to FOC for Sensorless feedback selection to be active. Selection 5 is only available when compatible feedback option card is installed. This parameter was changed to non-linkable for firmware version 3.01.	Default: Options:	0 = "Encoder 0" 0 = "Encoder 0" 1 = "Encoder 1" 2 = "Sensorless" 3 = "Reserved" 4 = "Motor Sim" 5 = "FB Opt Port0"			
223	**Mtr Fdbk Alt Sel** Selects alternate feedback device if the feedback device selected in Par 222 [Mtr Fdbk Sel Pri] fails. Notes: Par 485 [Motor Ctrl Mode] must be set to FOC for Sensorless feedback selection to be active. Selection 5 is only available when compatible feedback option card is installed. This parameter was changed to non-linkable for firmware version 3.01.	Default: Options:	2 = "Sensorless" 0 = "Encoder 0" 1 = "Encoder 1" 2 = "Sensorless" 3 = "Reserved" 4 = "Motor Sim" 5 = "FB Opt Port0"			
224	**TachSwitch Level** Sets the detection level for the automatic tach loss switchover routine. A drop in feedback speed at this percent of rated speed over 0.5 msec will cause a tach switch from primary to alternate feedback device. This feature is enabled when bit 16 [Auto Tach Sw] in Par 153 [Control Options] is selected. Setting this level lower will make the tach switch detection more sensitive and lower the minimum speed at which a tach switch can occur. Setting this level higher will make the tach switch less sensitive and raise the minimum speed for tach switch detection. Note: This parameter was changed to non-linkable for firmware version 3.01.	Units: Default: Min/Max:	% 10.0000 5.0000/25.0000		RW	Real
225	**Virtual Edge/Rev** Set the EPR (Edges Per Revolution) scaling for calculating motor position. Used in the calculation of the position feedback such as Par 229 [MtrPosit Stimulat].	Units: Default: Min/Max:	EPR 4096 10/16777216		RW	32-bit Integer
226	**Motor Speed Est** Displays the estimated motor speed, calculated when the selected feedback is sensorless or when encoderless ridethrough is enabled.	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+14112.0000 Par 4 [Motor NP RPM] = 1.0pu		RO	Real
227	**Motor Posit Est** Summation (or integration) of Par 226 [Motor Speed Est] scaled by the value in Par 225 [Virtual Edge/Rev].	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
228	**MtrSpd Simulated** The motor speed output of the motor simulator. The motor simulator provides motor speed information during setup and troubleshooting when actual motor control is not desired or possible. To use the motor simulator, enter a value of 4 in Par 222 [Mtr Fdbk Sel Pri] or Par 223 [Mtr Fdbk Alt Sel].	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+14112.0000 Par 4 [Motor NP RPM] = 1.0pu		RO	Real
229	**MtrPosit Simulat** The motor position output of the motor simulator. The motor simulator provides motor position information during setup and troubleshooting when actual motor control is not desired or possible. To use the motor simulator, enter a value of 4 in Par 222 [Mtr Fdbk Sel Pri] or Par 223 [Mtr Fdbk Alt Sel].	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
230	**Encdr0 Position** Displays the position feedback (accumulator) from encoder 0. The value changes by a value of four times (4x) the Pulses Per Revolution (PPR) rating of the encoder for each full revolution of the encoder shaft. Used by the Velocity Position Loop (VPL) to close the position loop if position control is selected.	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
231	**Encdr0 Spd Fdbk** Displays the speed feedback from encoder 0. Calculated from the change of Par 230 [Encdr0 Position] and Par 232 [Encoder0 PPR].	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+14112.0000 Par 4 [Motor NP RPM] = 1.0pu		RO	Real

No.	Name Description	Values		Linkable	Read-Write	Data Type
232	**Encoder0 PPR** Sets the pulse per revolution rating of the feedback device connected to the Encoder 0 input. This parameter must be set to one of the values displayed in bold in Table 232A below.	Units: Default: Min/Max:	PPR 1024 10/20000		RW	16-bit Integer

Table 232A: PPR Rating Values

n =	2^n =	x	mod 75	mod 125	mod 225	mod 375	mod 625	mod1125
0	1		**75**	**125**	**225**	**375**	**625**	**1125**
1	2		**150**	**250**	**450**	**750**	**1250**	**2250**
2	4		**300**	**500**	**900**	**1500**	**2500**	**4500**
3	8		**600**	**1000**	**1800**	**3000**	**5000**	**9000**
4	**16**		**1200**	**2000**	**3600**	**6000**	**10000**	**18000**
5	**32**		**2400**	**4000**	**7200**	**12000**	**20000**	--
6	**64**		--	--	--	--	--	--
7	**128**		--	--	--	--	--	--
8	**256**		--	--	--	--	--	--
9	**512**		--	--	--	--	--	--
10	**1024**		--	--	--	--	--	--
11	**2048**		--	--	--	--	--	--
12	**4096**		--	--	--	--	--	--
13	**8192**		--	--	--	--	--	--
14	**16384**		--	--	--	--	--	--

No.	Name Description	Values			Linkable	Read-Write	Data Type

233 **Encdr 0/1 Config**

Specifies the configuration options for the encoder 0 and encoder 1.

- Bits 0 [Enc0 Filt bt0] through 3 [Enc0 Filt bt3], or Bits 16 [Enc1 Filt bt0] through 19 [Enc1 Filt bt3] configure the encoder input filter (see Par Table 233A: Encoder Input Filter Settings). The filter requires the input signal to be stable for the specified time period. Input transitions within the filter time setting will be ignored. Bits 0-3 (or 16-19) add 100ns filtering per stage to encoder inputs.
- Bits 4 [Enc0 4x] and 5 [Enc0 A Phs] or 20 [Enc1 4x] and 21[Enc1 A Phs] determine how the encoder channel A and B signals will be interpreted. Typically, both encoder phases A and B are used so that direction information is available. Par 230 [Encdr0 Position] counts up for forward rotation and down for reverse rotation. If bit 5 is set, then the B phase signal is ignored. As a result, the encoder position will only increase, regardless of rotation direction. Bits 4 and 5 together also determine the number of edges counted per encoder pulse (see Par Table 233B: Multiplier and Direction Settings). "4x" sampling counts both rise and fall of both A and B encoder phases, hence 4 edges per pulse. In 4x mode, the encoder position will change by four times the encoder pulses per revolution rating (PPR) per encoder revolution (e.g., it increments the value in Par 230 [Encdr0 Position] by 4096 for one revolution of a 1024 PPR encoder).
- Bit 6 [Enc0 Dir] and 22 [Enc1 Dir] inverts the channel A input, thus reversing the direction of the feedback. Note that changes in encoder direction (bit 6 or 22) may require changing Par 153 [Control Options] bit 10 [Motor Dir].
- Bit 7 [Enc0 EdgTime] or bit 23 [Enc1 EdgTime] configures the method of sampling used by the Velocity Position Loop (VPL). Setting the bit chooses "Edge to Edge" sampling, while resetting the bit to zero chooses "Simple Difference" sampling. "Simple Difference" sampling calculates speed by examining the difference between pulse counts over a fixed sample time. "Edge to Edge" sampling adjusts the sample time to synchronize with the position count updates from the daughter card - improving the accuracy of the speed calculation.
- Bits 10 [En0SmplRate bt0] through 12 [En0SmplRate bt2] or bits 26 [En1SmplRate bt0] through 28 [En1SmplRate bt2] configure the Finite Impulse Response (FIR) Filter (see Par Table 233C: FIR Filter Settings). This setting reduces the effect of noisy feedback on the system. Refer to the Speed/Position Feedback section of the *PowerFlex® 700S with Phase II Control Reference Manual*, publication PFLEX-RM003 for details.

Note: Bit 27 is set to 0 = False by default for firmware version 1.11 and is set to 1 = True by default for firmware version 2.03.

Options	Reserved	Reserved	Reserved	En1SmplRt b2	En1SmplRt b1	En1SmplRt b0	Reserved	Reserved	Enc1 EdgTime	Enc1 Dir	Enc1 A Phs	Enc1 4x	Enc1 Filt b3	Enc1 Filt b2	Enc1 Filt b1	Enc1 Filt b0	Reserved	Reserved	Reserved	En0SmplRt b2	En0SmplRt b1	En0SmplRt b0	Reserved	Reserved	Enc0 EdgTime	Enc0 Dir	Enc0 A Phs	Enc0 4x	Enc0 Filt b3	Enc0 Filt b2	Enc0 Filt b1	Enc0 Filt b0	
Default	0	0	0	0	1	1	0	0	1	0	0	1	1	0	1	0	0	0	1	0	1	1	1	0	1	0	0	1	1	0	1	0	0 = False
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1 = True

Table 233A: Encoder Input Filter Settings

Bit 3/19	2/18	1/17	0/16	Encoder Bit Filter Settings
0	0	0	0	Filter disabled
0	0	0	1	100 ns filter
0	0	1	0	200 ns filter
0	0	1	1	300 ns filter
0	1	0	0	400 ns filter
0	1	0	1	500 ns filter
0	1	1	0	600 ns filter
0	1	1	1	700 ns filter
1	0	0	0	800 ns filter (default setting)
1	0	0	1	900 ns filter
1	0	1	0	1000 ns filter
1	0	1	1	1100 ns filter
1	1	0	0	1200 ns filter
1	1	0	1	1300 ns filter
1	1	1	0	1400 ns filter
1	1	1	1	1500 ns filter

Table 233B: Multiplier and Direction Settings

Bit 5/21	4/20	Mult	Directions	Comments
0	0	2x	fwd/rev	Counts rise/fall of phase A, phase B only used to find direction
0	1	4x	fwd/rev	Counts rise/fall of both A and B phases (default setting)
1	0	1x	fwd only	Counts rise of phase A. Phase B ignored.
1	1	2X	fwd only	Counts rise of phase A. Phase B ignored.

Table 233C: FIR Filter Settings

Bit 12/28	11/27	10/26	Taps
0	0	0	1
0	0	1	2
0	1	0	4
0	1	1	8
1	0	0	16
1	0	1	32
1	1	0	64
1	1	1	127

234 **Encdr 0/1 Error**

Indicates the error status of the encoder 0 and encoder 1.

Note: Bit 4 was changed to [Reserved] for firmware version 2.04.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Enc1 PhseLev	Enc1 PhseLos	Enc1 QuadLos	Enc1 Missing	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Enc0 PhseLev	Enc0 PhseLos	Enc0 QuadLos	Enc0 Missing	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1 = True

235 **RegisLtch0 Value**

Displays the registration data of port 0. Indicates the position reference counter value latched by the external strobes. The strobe signal used to trigger the latch is configurable by Par 236 [RegisLtch 0/1 Cnfg].

Default:	0	RW	32-bit Integer
Min/Max:	-/+2147483648		

No.	Name Description	Values			Linkable	Read-Write	Data Type
236	**RegisLtch 0/1Cnfg** Configures the registration latch at port 0 or port 1 to be used with Encoder 0 or Encoder 1, respectively. • Bit 0 [RL0 Enc1] selects the encoder for the input source of latched data. Setting bit 0 selects encoder 1, resetting the bit to zero selects encoder 0. • Bits 1 [RL0 TrgSrc0], 2 [RL0 TrgSrc1], 17 [RL1 TrgSrc0] and 18 [RL1 TrgSrc1] select the trigger source (see Par Table 236A: Trigger Source Settings). • Bits 3 [RL0 TrgEdg0], 4 [RL0 TrgEdg1], 19 [RL1 TrgEdg0] and 20 [RL1 TrgEdg1] select which edges signal the position (see Par Table 236B: Edge Selection Settings). • Bits 5 [RL0 DirRev], 6 [RL0 DirFwd], 21 [RL1 DirRev] and 22 [RL1 DirFwd] set the direction of position capture (see Par Table 236C: Trigger Direction Settings). • Bits 8 [SL DI Filt 0], 9 [SL DI Filt 1], 10 [SL DI Filt 2], and 11 [SL DI Filt 3] configure a filter for the digital input 1 and 2 (see Par Table 236D: Filter Settings). The filter requires the input signal to be stable for the specified time period. Input transitions within the filter time setting will be ignored. Bits 8-11 add 100ns filter per stage to external trigger • Bit 0 &16 - off = Enc0 input to latch, on = Enc1 input to latch						

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	RL1 DirFwd	RL1 DirRev	RL1 TrgEdg1	RL1 TrgEdg0	RL1 TrgSrc1	RL1 TrgSrc0	RL1 Encoder1	Reserved	Reserved	Reserved	Reserved	SL DI Filt 3	SL DI Filt 2	SL DI Filt 1	SL DI Filt 0	Reserved	RL0 DirFwd	RL0 DirRev	RL0 TrgEdg1	RL0 TrgEdg0	RL0 TrgSrc1	RL0 TrgSrc0	RL0 Encoder1	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

Table 236A: Trigger Source Settings

Bit 2 /18	1/17	
0	0	Encoder Ch Z AND Ext Trig A
0	1	Ext Trig B (Digital Input 2)
1	0	Ext Trig A (Digital Input 1)
1	1	Encoder 0 (Primary Encoder) Z Phase

Table 236B: Edge Selection Settings

Bit 4/20	3/19	
0	0	Capture on rising edge
0	1	Capture on falling edge
1	0	Capture on both edges
1	1	Disable capture

Table 236C: Trigger Direction Settings

Bit 6/22	5/21	
0	0	Not Configured
0	1	Reverse
1	0	Forward
1	1	Both Directions

Table 236D: Filter Settings

Bit 11	10	9	8	Input Filter Setting
0	0	0	0	Filter disabled
0	0	0	1	100 ns filter
0	0	1	0	200 ns filter
0	0	1	1	300 ns filter
0	1	0	0	400 ns filter
0	1	0	1	500 ns filter
0	1	1	0	600 ns filter
0	1	1	1	700 ns filter
1	0	0	0	800 ns filter (default setting)
1	0	0	1	900 ns filter
1	0	1	0	1000 ns filter
1	0	1	1	1100 ns filter
1	1	0	0	1200 ns filter
1	1	0	1	1300 ns filter
1	1	1	0	1400 ns filter
1	1	1	1	1500 ns filter

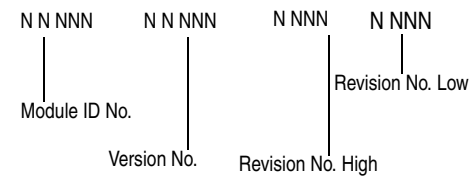
237	**RegisLtch0/1 Ctrl** Configures the control for registration latch 0 and 1. • Set bit 0 [RL0 Arm Req] and bit 16 [RL1 Arm Req] to arm the registration logic for the next trigger event. The particular latch will be armed and ready to be strobed on the next occurrence of the trigger input. • Set bit 1 [RL0 DisarmReq] and bit 17 [RL1 DisarmReq] to disarm the registration logic for next trigger event. After the registration is captured, bit 0 [RL0 Arm Req] and bit 16 [RL1 Arm Req] automatically resets back to 0 after found. Bit 1 [RL0 DisarmReq] and bit 17 [RL1 DisarmReq] are only needed to disarm a registration latch that has not been found yet. Setting bits 1 and 17 will clear the bits 0 and 6. Setting bits 0 and 6 sets bits 0 [RL0 Armed] and bit 16 [RL1 Armed] and clears bits 1 [RL0 Found] and bit 17 [RL1 Found] of Par 238 [RegisLtch0/1Stat].						

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	RL1 DisarmReq	RL1 Arm Req	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	RL0 DisarmReq	RL0 Arm Req	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

No.	Name Description	Values	Linkable	Read-Write	Data Type
238	**RegisLtch0/1Stat** Indicates the control status of registration latch 0 and 1. • Bit 0 [RL0 Armed] and bit 16 [RL1 Armed] indicates the registration latch is armed. • Bit 1 [RL0 Found] and bit 17 [RL1 Found] indicates the registration event has triggered the latch. • Rising edge of 'Arm request' will set the 'Armed' status bit. • Rising edge of 'Disarm request' will clear the 'Armed' status bit.				
239	**RegisLtch1 Value** Displays the registration data of port 1. Indicates the position reference counter value latched by the external strobes. The strobe signal used to trigger the latch is configurable by Par 236 [RegisLtch 0/1Cnfg].	Default: 0 Min/Max: -/+2147483648		RO	32-bit Integer
240	**Encdr1 Position** Displays the position feedback (accumulator) from encoder 0. The value changes by a value of four times (4x) the Pulses Per Revolution (PPR) rating of the encoder for each full revolution of the encoder shaft. Used by the VPL to close the position loop if position control is selected.	Default: 0 Min/Max: -/+2147483648		RO	32-bit Integer
241	**Encdr1 Spd Fdbk** Displays the speed feedback from encoder 1. Calculated from the change of Par 240 [Encdr1 Position] and Par 242 [Encoder1 PPR].	Units: RPM Default: 0 Min.Max: -/+14112.0000 Scale: Par 4 [Motor NP RPM] = 1.0pu		RO	Real
242	**Encoder1 PPR** Sets the pulse per revolution rating of the feedback device connected to the Encoder 1 input.	Units: PPR Default: 1024 Min/Max: 10/20000		RW	16-bit Integer
245	**Spd Fdbk TP Sel** Enter or write a value to select the data displayed in Par 246 [Spd Fdbk TP RPM] and Par 247 [Spd Fdbk TP Data]. Note: Option values 5 - 15 were changed to "Reserved" and option 41 "First Diff" was added for firmware version 2.04.	Default: 0 = "Zero" Options: 0 = "Zero" 1 = "Clock Time" 2 = "InactvFbkDev" 3 = "ActiveFbkDev" 4 = "MCP Fdbk Dev" 5 = "Reserved" 6 = "Reserved" 7 = "Reserved" 8 = "Reserved" 9 = "Reserved" 10 = "Reserved" 11 = "Reserved" 12 = "Reserved" 13 = "Reserved" 14 = "Reserved" 15 = "Reserved" 16 = "MCP PPR" 17 = "MCP 2^n" 18 = "E0 Edge Time" 19 = "E0 dEdge" 20 = "E0 dTime" 21 = "E0 EPR" 22 = "E0 Edge Mode" 23 = "E0 nMax" 24 = "E0 Error" 25 = "E0 Qloss pk" 26 = "E0 Ploss pk" 27 = "E0 PlevlHist" 28 = "E1 Edge Time" 29 = "E1 dEdge" 30 = "E1 dTime" 31 = "E1 EPR" 32 = "E1 Edge Mode" 33 = "E1 nMax" 34 = "E1 Error" 35 = "E1 Qloss pk" 36 = "E1 Ploss pk" 37 = "E1 PlevlHist" 38 = "E0 Delta2Err" 39 = "E1 Delta2Err" 40 = "EOB Present" 41 = "First Diff"			
246	**Spd Fdbk TP RPM** Displays the value selected in Par 245 [Spd Fdbk TP Sel] in RPM. This display should only be used if the selected value is floating point data.	Units: RPM Default: 0.0 Min/Max: -/+8.0 pu Scale: Par 4 [Motor NP RPM] = 1.0pu		RO	Real
247	**Spd Fdbk TP Data** Displays the value selected in Par 245 [Spd Fdbk TP Sel]. This display should only be used if the selected value is integer data.	Default: 0 Min/Max: -/+32768		RO	16-bit Integer
249	**Fdbk Option ID** Displays information about the Feedback Option. • Bits 15-11 indicate Module ID Number. • Bits 10-6 indicate Version Number. • Bits 5-3 indicate Revision Number High. • Bits 2-0 indicate Revision Number Low. Hexadecimal 1000 indicates resolver, hexadecimal 2000 indicates old high-resolution board, and hexadecimal 2040 indicates new high-resolution board.	Options:			
250	**FB Opt0 Posit** Displays the position feedback (accumulator) from the feedback option card port 0.	Default: 0 Min/Max: -/+2147483648		RO	32-bit Integer

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	RL1 Found	RL1 Armed	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	RL0 Found	RL0 Armed
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True



No.	Name Description	Values		Linkable	Read-Write	Data Type
251	**FB Opt0 Spd Fdbk** Displays the speed feedback from the feedback option card port 0.	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+14000.0000 Par 4 [Motor NP RPM] = 1.0pu		RO	Real
252	**FB Opt1 Posit** Displays position feedback (accumulator) from port 1 of the feedback option card.	Default: Min/Max:	0 0/2147483648		RO	32-bit Integer
253	**FB Opt1 Spd Fdbk** Displays speed feedback from port 1 of the feedback option card.	Units Default: Min/Max:	RPM 0.0 -/+8.0 pu		RO	Real

254 Opt0/1 RegisCnfg

Configures the registration latch for port 0 of the feedback option card.

- Bits 3 [O0 RLTrgEdg0], 4 [O0 RLTrgEdg1], 19 [O1 RLTrgEdg0] and 20 [O1 RLTrgEdg1] select which trigger edges signal the position (see Par Table 254A: Edge Selection Settings).
- Bits 5 [O0 RL DirRev], 6 [O0 RL DirFwd], 21 [O1 RL DirRev] and 22 [O1 RL DirFwd] set the direction of position capture (see Par Table 254B: Direction Settings).
- Bits 8-11 configure a digital filter for the registration trigger signal. This filter can be used to reject spurious noise. The filter works by waiting a programmed time before deciding that the signal is valid. This waiting imposes a mandatory delay in the registration signal. The filter delay is programmable in increments of 100 nanoseconds from 0 (or no delay) up to 700 nanoseconds.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	O1 RL DirFwd	O1 RL DirRev	O1 RLTrgEdg1	O1 RLTrgEdg0	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	RL Filt bit3	RL Filt bit2	RL Filt bit1	RL Filt bit0	Reserved	O0 RL DirFwd	O0 RL DirRev	O0 RLTrgEdg1	O0 RLTrgEdg0	Reserved	Reserved	Reserved	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0 = False
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1 = True

Bits 3 & 4, 19 & 20, please refer to Table 254A: Edge Selection Settings below:

Table 254A: Edge Selection Settings

Bit 4/20	Bit 3/19	
0	0	Capture on rising edge
0	1	Capture on falling edge
1	0	Capture on both edges
1	1	Disable capture

Table 254B: Direction Settings

Bit 6/22	Bit 5/21	
0	0	Disable capture
0	1	Capture position during Reverse rotation
1	0	Capture position during Forward rotation
1	1	Capture position during either rotation

255 Opt0/1 RegisCtrl

Configures the registration control on port 0 of the feedback option card.

- Set bits 0 [O0 Arm Req] and 16 [01 Arm Req] to arm the registration logic for the next trigger event. The particular latch will be armed and ready to be strobed on the next occurrence of the trigger input.
- Set bits 1 [O0 DisarmReq] and 17 [01 DisarmReq] to disarm the registration logic for next trigger event.

After the registration is captured, bit 0 [O0 Arm Req] and bit 16 [O1 Arm Req] automatically resets back to 0 after found. Bit 1 [O0 DisarmReq and bit 17 [O1 DisarmReq] are only needed to disarm a registration latch that has not been found yet. Setting bits 1 and 17 will clear the bits 0 and 6. Setting bits 0 and 6 sets bits 0 [Opt0 Armed] and bit 16 [Opt1 Armed] and clears bits 1 [Opt0 Found] and bit 17 [Opt1 Found] of parameter 256 [Opt0/1 RegisStat].

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	O1 DisarmReq	O1 Arm Req	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	O0 DisarmReq	O0 Arm Req	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1 = True

256 Opt0/1 RegisStat

Indicates the registration control status on port 0 of the feedback option card.

- Bit 0 [Opt0 Armed] indicates the registration latch is armed.
- Bit 1 [Opt0 Found] indicates the registration event has triggered the latch.
- Rising edge of 'Arm request' will set the 'Armed' status bit.
- Rising edge of 'Disarm request' will clear the 'Armed' status bit.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Opt1 Found	Opt1 Armed	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Opt0 Found	Opt0 Armed	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1 = True

No.	Name Description	Values			Linkable	Read-Write	Data Type
257	**Opt 0 Regis Ltch** Displays the registration data of the feedback option card port 0. The registration data is the position reference counter value latched by the external strobes. The strobe signal used to trigger the latch is configurable by the Par 254 [Opt0/1 RegisCnfg].	Default: Min/Max:	0 -/+2147483648			RO	32-bit Integer
258	**Opt 1 Regis Ltch** Displays the registration data of the feedback option card port 0. The registration data is the position reference counter value latched by the external strobes. The strobe signal used to trigger the latch is configurable by the Par 254 [Opt0/1 RegisCnfg].	Default: Min/Max:	0 -/+2147483648			RO	32-bit Integer

259 **Stegmann0 Cnfg**

Configures the Stegmann Hi-Resolution Encoder Feedback Option.

- Bit 5 [Direction] determines counting direction. If clear, direction is forward or up. If set, the direction is reverse or down.
- Bits 10 [SmplRate bt0] -12 [SmplRate bt2] configure the Finite Impulse Response (FIR) Filter (see Par Table 259A: FIR Filter Settings). This setting reduces the effect of noisy feedback on the system. Refer to the Speed/Position Feedback section of the *PowerFlex® 700S with Phase II Control Reference Manual*, publication PFLEX-RM003 for details.

Notes: Bit 11 [SmplRate bt1] is set to 0 = False by default for firmware version 1.11 and is set to 1 = True by default for firmware version 2.03. This parameter was changed to non-linkable for firmware version 3.01.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	SmplRate bt2	SmplRate bt1	SmplRate bt0	Reserved	Reserved	Reserved	SW Reset	Direction	Reserved	Reserved	Reserved	Reserved	Reserved	
Default	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

Table 259A: FIR Filter Settings

Bit 12	11	10	Taps
0	0	0	1
0	0	1	2
0	1	0	4
0	1	1	8
1	0	0	16
1	0	1	32
1	1	0	64
1	1	1	127

260 **Stegmann0 Status**

Indicates faults on the Stegmann Hi-Resolution Encoder Feedback Option.

- Bit 8 [Open Wire] indicates an open wire fault.
  The feedback option card checks for a pre-determined constant value. If this value is not within tolerances, an open wire fault is declared. A quadrature check also is done. If an error occurs during the check, the ope wire check is aborted. If 3 quadrature errors occur in succession, the open wire check will complete and the constant value checked again. If this value is not within tolerances, the fault is declared.
- Bit 9 [PowerSup Er] indicates the failure of the power supply.
- Bit 10 [PwrUpDiag Er] indicates the option board failed its power-up diagnostic test.
  The pattern on the FPGA must be identical to the pattern written from the DSP, or the board status test will fail.
- Bit 11 [MsgChksum Er] indicates a message checksum fault.
  The check sum associated with the Heidenhain encoder must be correct and acknowledged by the feedback option card.
- Bit 12 [Time Out Err] indicates a RS-485 time-out fault.
  This check requires information to be sent from the encoder to the feedback option card within a specified time. Typical times are about 10 clock cycles before and error is detected. This check is done only at power-up.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Time Out Err	MsgChksum Er	PwrUpDiag Er	PowerSup Er	Open Wire	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

No.	Name Description	Values		Linkable	Read-Write	Data Type
261	**Steg&Hiedn TPSel** Selects data displayed by Par 262 [Steg&Hiedn TPDta]. • Hh0 Edge Time - Latency counter value, not used for Hi-Resolution Feedback Option. • Hh0 dEdge - Change in edge counts for one 500 microsecond update. At constant speed, this value should be constant. • Hh0 dTime - Change in update time. This value should be constant, 500 microseconds. • Hh0 EPR - This value should be 1,048,576 counts per revolution-this is a constant value. • Hh0 nMax - This is a scaled value of 2. • Hho Delta2Err - Derivative of value 2.	Default: Options:	0 = "Zero" 0 = "Zero" 1 = "St0 EdgeTime" 2 = "St0 dEdge" 3 = "St0 dTime" 4 = "St0 EPR" 5 = "St0 EdgeMode" 6 = "St0 nMax" 7 = "St0 Delta2Er" 8 = "Reserved" 9 = "Reserved" 10 = "Reserved" 11 = "Hh0 EdgeTime" 12 = "Hh0 dEdge" 13 = "Hh0 dTime" 14 = "Hh0 EPR" 15 = "Hh0 EdgeMode" 16 = "Hh0 nMax" 17 = "Hh0 Delta2Er"			
262	**Steg&Hiedn TPDta** Displays data selected by Par 260 [Stegmann0 Status].	Default: Min/Max:	0 -/+32768		RO	16-bit Integer
263	**Heidenhain0 Cnfg** Configures the Heidenhain Encoder Feedback Option. Note: This parameter was added for firmware version 2.03. • Bit 5 [Direction] determines the counting direction. Set this bit to "0" to count up or forward. Set this bit to "1" to count in reverse or down. • Bit 6 [SW Reset] setting this bit to "1" resets and restarts the option card. • Bits 10 -12 form a 3 bit moving average filter sampling rate. (See Par Table 263A: Sample Rate Bit Settings). Note: This parameter was changed to non-linkable for firmware version 3.01.					

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	SmplRate bt2	SmplRate bt1	SmplRate bt0	Reserved	Reserved	Reserved	SW Reset	Direction	Reserved	Reserved	Reserved	Reserved	Reserved
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

Table 263A: Sample Rate Bit Settings

Bit 12	11	10	Exponent Value 'n'	Filter Sample Size = 2^n
0	0	0	0	1
0	0	1	1	2
0	1	0	2	4
0	1	1	3	8 (Default)
1	0	0	4	16
1	0	1	5	32
1	1	0	6	64
1	1	1	7	127

No.	Name Description	Values			Linkable	Read-Write	Data Type
264	**Heidenhain0 Stat** Indicates fault and alarm statuses on the Heidendhain Encoder Feedback Option and Endat communication. • Bit 5 [Sig Amplitud] indicates that the signal amplitude is insufficient or too large. • Bit 6 [Quadrate Er] indicates that there is a signal quadrature error. • Bit 7 [Open Wire] indicates an open wire fault. • Bit 8 [VoltageLvlEr] indicates that the operating voltage is too high or too low. • Bit 9 [PowerSup Er] indicates the failure of the power supply. • Bit 10 [PowerUpDiag Er] indicates the option board failed its power-up diagnostic test. The pattern on the FPGA must be identical to the pattern written from the DSP, or the board status test will fail. • Bit 11 [MsgChecksum Er] indicates a message checksum fault. The check sum associated with the Endat communication device must be correct and acknowledged by the feedback option card. • Bit12 [Time Out Err] indicates an Endat time-out fault. • Bit13 [PPR Error] indicates an encoder PPR setting mismatch fault. • Bit14 [Bootup Error] indicates an Endat boot-up fault. • Bit 15 [FW VersionEr] indicates • Bit16 [LightSrc Er] indicates an Endat light source fault. • Bit17 [Sig Amplitud] indicates an Endat signal amplitude fault. • Bit18 [PstvValue Er] indicates an Endat positive value fault. • Bit19 [Over Voltage] indicates an Endat over voltage fault. • Bit20 [Undr Voltage] indicates an Endat under voltage fault. • Bit21 [Over Current] indicates an Endat over current fault. • Bit24 [FrqExced Alm] indicates an Endat frequency exceeded alarm. • Bit25 [Temprtr Alm] indicates an Endat temperature exceeded alarm. • Bit26 [LghtCtrl Alm] indicates an Endat limit of light control alarm. • Bit28 [RefPoint Alm] indicates an Endat reference point alarm. Notes: This parameter was added for firmware version 2.03. Bit 14 was changed from [Endat BootEr] to [Bootup Error] and Bit 15 [FW VersionErr] is new for firmware version 3.01.						

Options	Reserved	Reserved	Reserved	RefPoint Alm	Reserved	LghtCtrl Alm	Temprtr Alm	FrqExced Alm	Reserved	Reserved	Over Current	Undr Voltage	Over Voltage	PstvValue Er	Sig Amplitud	LightSrc Er	FW VersionEr	Bootup Error	PPR Error	Time Out Err	MsgChecksum Er	PowerUpDiag Er	PowerSup Er	VoltageLvlEr	Open Wire	Quadrate Er	Sig Amplitud	Reserved	Reserved	Reserved	Reserved	Reserved
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

265	**Heidn Mkr Offset** Configures marker offset values for the Heidenhain Encoder Feedback Option. The marker offset is specified within one revolution. Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	0.0000 0.0000/4294967295	✓	RW	32-bit Integer
266	**Heidn Encdr Type** Configures the encoder type manually if the Endat type is not used. Bit 1 [Not EnDat] when this bit is set it indicates that an Endat type encoder is not used. Bit 2 [Multi Turn] when this bit is set it indicates that a multi-turn type encoder is used. Bit 5 [Endat24bitSl] when this bit is on, the Heidenhain encoder works as Endat / Single turn / 24 bits. When this bit is off, the Heidenhain encoder works as Endat / Single turn / 20 bits. Notes: This parameter was added for firmware version 2.03. Bit 1 [Not Endat] was changed to “0” (false) and bit 2 [Multi Turn] was changed to “1” (true) for firmware version 2.04. Bit 1 [Not Endat] was changed to “1” (true), bit 2 [Multi Turn] was changed to “0” (False), and bit 6 [Endat24bitSl] was added for firmware version 3.01.			✓	RW	16-bit Integer

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Endat24bitSl	Reserved	Reserved	Multi Turn	Not EnDat	Reserved
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

267	**Heidn Encdr PPR** Configures the encoder PPR for the Heidenhain Encoder Feedback Option. Note: This parameter was added for firmware version 2.03.	Units: Default: Min/Max:	PPR 2048 10/100000		RW	32-bit Integer

No.	Name Description	Values			Linkable	Read-Write	Data Type

268 **Resolver0 Cnfg**

Configures options for the resolver option card port 0.

- Setting bit 0 [Cable Tune] enables the cable tuning test, resetting the bit to zero disables the test.
- Bit 1 [Tune Param] has been disabled.
- Bits 2 [Resolution 0] and 3 [Resolution 1] select the resolver resolution (see Par Table 268A: Resolution Settings). This determines the number of significant bits that are calculated in the value of parameter 250 [FB Opt0 Posit]. It does not affect the number of counts created per resolver revolution (see Par Table 268B: Resolution and Least Significant Bits Used). Also, the resolution sets a limit on the maximum tracking speed (see Par Table 268C: Resolution and Resolver Tracking Speed).
- Setting bit 4 [Energize] energizes the resolver, resetting the bit to zero de-energizes the resolver.
- Bit 5 [Resolver Dir] determines counting direction. If clear, direction is forward or up. If set, the direction is reverse or down.
- Bit 9 [Edge Time] configures the method of sampling used by the Velocity Position Loop (VPL). Setting the bit chooses "Edge to Edge" sampling, while resetting the bit to zero chooses "Simple Difference" sampling. "Simple Difference" sampling calculates speed by examining the difference between pulse counts over a fixed sample time. "Edge to Edge" sampling adjusts the sample time to synchronize with the position count updates from the daughter card - improving the accuracy of the speed calculation.
- Bits 10 [SmplRate bt0] through 12 [SmplRate bt2] configure the Finite Impulse Response (FIR) Filter (see Par Table 268D: FIR Filter Settings). This setting reduces the effect of noisy feedback on the system. Refer to the Speed/Position Feedback section of the *PowerFlex® 700S with Phase II Control Reference Manual*, publication PFLEX-RM003 for details.

Note: Bit 11 [SmplRate bt0] is set to 0 = False by default for firmware version 1.11 and bit 11 [SmplRate1] is set to 1 = True by default for firmware version 2.03.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	SmplRate bt2	SmplRate bt1	SmplRate bt0	Reserved	Reserved	Reserved	Reserved	Resolver Dir	Energize	Resolution 1	Resolution 0	Reserved	Cable Tune
Default	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

Table 268A: Resolution Settings

Bit 3	2	Resolution
0	0	10 bit resolution
0	1	12 bit resolution (default setting)
1	0	14 bit resolution
1	1	16 bit resolution

Table 268B: Resolution and Least Significant Bits Used

Resolution	LSB Not Used	Parameter 250 Increments by
16 bit	All bits used	1
14 bit	2 LSB not used	4
12 bit	4 LSB not used	8
10 bit	6 LSB not used	64

Table 268C: Resolution and Resolver Tracking Speed

Resolution	Maximum Carrier Freq.	Tracking Speed for X1 Resolver	Tracking Speed for X2 Resolver	Tracking Speed for X5 Resolver
10 bit	34 kHz	55 K-rpm	27.5 K-rpm	11 K-rpm
12 bit	24kHz	13.8 K-rpm	6.9 K-rpm	2.76 K-rpm
14 bit	14kHz	3480 rpm	1740 rpm	696 rpm
16 bit	10 kHz	900 rpm	450 rpm	180 rpm

Table 268D: FIR Filter Settings

Bit 12	11	10	Taps
0	0	0	1
0	0	1	2
0	1	0	4
0	1	1	8
1	0	0	16
1	0	1	32
1	1	0	64
1	1	1	127

269 **Resolver0 Status**

Indicates status of the resolver option card port 0.

- Bit 0 [-Cable Tune]
- Bit 1 [-Tune Result] indicates the tuning Parameter type. When set, it indicates the tuning is using the parameter database. When cleared, it indicates the tuning is using derived data.
- Bit 2 [-Mtr Turning] indicates that the motor is turning.
- Bit 4 [Energized] indicates the resolver is energized.
- Bit 8 [Open Wire] indicates a problem with the cable (open circuit).
- Bit 9 [Power Supply] indicates problem with the option card's power supply.
- Bit 10 [Diag Fail] indicates the option card has failed its power-up diagnostics.

Options	Reserved	Reserved	Reserved	Reserved	Select OK	Diag Fail	Power Supply	Open Wire	Reserved	Reserved	Reserved	Energized	-Cable Comp	-Mtr Turning	-Tune Result	-Cable Tune
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values	Linkable	Read-Write	Data Type
270	**Reslvr0 TP Sel** Enter or write a value to select Fault data displayed in Par 271 [Reslvr0 TP Data].	Default: 0 = "Zero" Options: 0 = "Zero"; 1 = "R0 Edge Time"; 2 = "R0 dEdge"; 3 = "R0 dTime"; 4 = "R0 EPR"; 5 = "R0 Edge Mode"; 6 = "R0 nMax"; 7 = "R0 Delta2Err"			
271	**Reslvr0 TP Data** Displays the data selected by Par 270 [Reslvr0 TP Sel].	Default: 0 Min/Max: -/+2147483648		RO	32-bit Integer
272	**Reslvr0 SpdRatio** Specifies the speed ratio for the resolver option card port 0. The speed ratio comes from the following formula. Speed ratio = electrical revolutions / mechanical revolutions = pole count / 2. Note: Option 0 = "Zero" was added for firmware version 2.04.	Default: 1 = 2 poles (x1) Options: 0 = "Zero"; 1 = 2 Poles (x1); 2 = 4 Poles (x2); 3 = 6 Poles (x3); 4 = 8 Poles (x4); 5 = 10 Poles(x5)			
273	**Reslvr0 Carrier** Specifies the resolver carrier frequency for the resolver option card port 0.	Units: Hz Default: 0 Min/Max: 0/10000		RO	32-bit Integer
274	**Reslvr0 In Volts** Specifies the resolver input voltage for the resolver option card port 0.	Units: Volt Default: 0.0000 Min/Max: 0.0000/31.0810		RO	Real
275	**Rslvr0 XfrmRatio** Specifies the resolver transform ratio for the resolver option card port 0.	Default: 0.0000 Min/Max: 0.0000/4.0950		RO	Real
276	**Reslvr0 CableBal** Specifies the resolver cable balance for the resolver option card port 0.	Default: 0 Min/Max: 0/255		RO	Real
277	**Reslvr0 Type Sel** Specifies used resolver. The values for options 5 & 12 were changed to "Reserved" for firmware version 2.04.	Default: 0 = "Disabled" Options: 0 = "Disabled"; 1 = "T2014/2087x1"; 2 = "T2014/2087x2"; 3 = "T2014/2087x5"; 4 = "MPL 460v"; 5 = "Reserved"; 6 = "Siemens 1FT6"; 7 = "PrkrHn ZX600"; 8 = "Reserved"; 9 = "1326Ax 460v"; 10 = "Reserved"; 11 = "Reserved"; 12 = "Reserved"; 13 = "Reserved"; 14 = "AmciR11XC107"			
285	**Linear1 Config** Used to configure a linear encoder when a Multi Device Interface (MDI) feedback card is installed. Note: This parameter was added for firmware version 2.03. • Bit 5 [Direction] - Setting this bit to "1" inverts the count (up/down) direction of the linear feedback position parameter 252 [FB Opt1 Posit]. If [FB Opt1 Posit] has been counting up for forward feedback sensor travel then setting this bit will cause [FB Opt1 Posit] to count down. The opposite behavior will occur when the sensor moves in the other direction. • Bit 6 [Stahl Linear] - Setting this bit to "1" indicates to the MDI card that a Stahl type linear device is being used. It this bit is set to "0" then a Temposonics linear device is being used. • Bits 10 - 12 form a 3 bit moving average filter sampling rate. (See Par Table 285A: Sample Rate Bit Settings).				

Options	Reserved	Reserved	Reserved	Op1SmplRt b3	Op1SmplRt b2	Op1SmplRt b1	Reserved	Reserved	Reserved	Stahl Linear	Direction	Reserved	Reserved	Reserved	Reserved	Reserved
Default	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

Table 285A: Sample Rate Bit Settings

Bit 12	11	10	Exponent Value 'n'	Filter Sample Size = 2^n
0	0	0	0	1
0	0	1	1	2
0	1	0	2	4
0	1	1	3	8 (Default)
1	0	0	4	16
1	0	1	5	32
1	1	0	6	64
1	1	1	7	127

No.	Name Description	Values	Linkable	Read-Write	Data Type
286	**Linear1 Status** Indicates faults on the Multi Device Interface (MDI). Bit 8 [Open Wire] indicates an open wire fault.				

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Open Wire	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

287	**Linear1 TP Sel** Enter or write a value to select Linear Feedback data displayed in Par 288 [Linear1 TP Data]. • Value 0 - Zero displays a value of zero. • Value 1 - L1 Edge Time displays the change displays the latency or edge time (the time since the last update of Par 252 [FB Opt1 Posit]). • Value 2 - L1 dEdge displays the change in Par 252 [FB Opt1 Posit] since the last feedback sample. • Value 3 - L1 DTime displays the change in time since the last feedback sample Note the sample rate is 10,000 counts per second (10 Mhz). • Value 4 - L1 EPR displays the change in edges per motor revolution. This number is the same value in Par 290 [Linear1 CPR]. • Value 5 - Edge Mode should always display a zero (0). • Value 6 - L1 nMax displays the numerator term for speed calculation. This number divided by change in time (TP3) is the calculated per unit speed for the linear feedback sensor.	Default: Options:	0 = "Zero" 0 = "Zero" 1 = "L1 Edge Time" 2 = "L1 dEdge" 3 = "L1 dTime" 4 = "L1 EPR" 5 = "L1 Edge Mode" 6 = "L1 nMax" 7 = "L1 Delta2Err"			
288	**Linear1 TP Data** Displays the data selected by Par 287 [Linear1 TP Sel].	Default: Min/Max::	0 -/+32768		RO	16-bit Integer
289	**Lin1 Update Rate** Sets the sample rate for the linear channel on the Multi Device Interface (MDI) feedback option.	Default: Options:	2 = "1.0 msec" 0 = "8.0 msec" 1 = "0.5 msec" 2 = "1.0 msec" 3 = "1.5 msec" 4 = "2.0 msec" 5 = "2.5 msec" 6 = "3.0 msec" 7 = "3.5 msec" 8 = "4.0 msec" 9 = "4.5 msec" 10 = "5.0 msec" 11 = "5.5 msec" 12 = "6.0 msec" 13 = "6.5 msec" 14 = "7.0 msec" 15 = "7.5 msec"			
290	**Linear1 CPR** Specifies the change in Par 252 [FB Opt1 Posit] for one revolution of the motor shaft. This value is used to scale the calculated speed, based on the change in feedback position. Units are count per motor revolution (CPR).	Units: Default: Min/Max:	CPR 1000 10/100000		RW	32-bit Integer
291	**Lin1Stahl Status** Displays the status of the Stahl linear encoder. The Stahl linear encoder works with the MDI option card. • Bit 8 [No Data Read] indicates that no data can be read from the encoder • Bit 9 [Alarm Optics] displays an alarm when fiber optics require cleaning • Bit 10 [Out of Range] indicates that the encoder read count is at the maximum value (524,287) • Bit 11 [ErrBits16-31] displays a diagnostic error code (refer to bits 16-31) • Bit 16 [Fault Optics] indicates that the read head for fiber optic cable must be cleaned or replaced • Bit 17 [Read Head] indicates that the fiber optic cable read head must be checked, aligned or replaced • Bit 18 [RAM error] indicates that the fiber optic cable read head must be replaced • Bit19 [EPROM error] indicates that there is an error with the communication module, replace read head. • Bit 20 [ROM error] indicates, replace read head. • Bit 22 [No Position] Cycle power to Stahl read head.					

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	No Position	Reserved	ROM error	EPROM error	RAM error	Read Head	Fault Optics	Reserved	Reserved	Reserved	Reserved	ErrBits16-31	Out of Range	Alarm Optics	No Data Read	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

296	**Motor Freq Ref** Currently Not Used. Note: This parameter was added for firmware version 2.03.	Units: Default: Min/Max:			RO	Real
297	**Output Curr Disp** Displays measured RMS motor current with a resolution of 1/10 amperes.	Units: Default: Min/Max: Scale:	Amps 0.0 0.0/9999.9 x 10		RO	32-bit Integer

No.	Name Description	Values		Linkable	Read-Write	Data Type
298	**Elapsed Run Time** Displays the total time that the drive has been running (inverter power devices active) with a resolution of 1/10 hour. This parameter is saved in power EE non-volatile memory. The value in this parameter can be changed (written to) by the user.	Units: Default: Min/Max: Scale:	Hrs 0.0 0.0/429496736.0 x 10		RW	32-bit Integer
299	**Elapsed MWHrs** Displays the total energy the drive has consumed or produced. Calculated from the absolute magnitude of the product of motor speed and motor torque (power), accumulated over time. This value will increase in both regen and motoring modes of operation. This parameter value can be changed (written to) by the user.	Units: Default: Min/Max: Scale:	MWHrs 0.0 0.0/429496736.0 x 10		RW	32-bit Integer
300	**Motor Spd Fdbk** Displays measured motor speed information from the selected feedback device.	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+14112.0000 Par 4 [Motor NP RPM] = 1.0pu		RO	Real
301	**Motor Speed Ref** Displays the speed reference value, after the limit function. This is the input to the error calculator and speed regulator.	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+14112.0000 Par 4 [Motor NP RPM] = 1.0pu		RO	Real
302	**Spd Reg PI Out** Displays the output of the speed regulator. This is the input to torque control. A value of 1.0 represents base torque of the motor.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu		RO	Real
303	**Motor Torque Ref** Displays the reference value of motor torque. The actual value of the motor torque is within 5% of this value.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu		RO	Real

304 **Limit Status**

Displays the limit status of conditions that may be limiting the current reference or torque reference.

- Bit 0 [+MCS Iq Lim] indicates that torque producing current is at its positive limit.
- Bit 1 [+MCS Ws Lim] indicates that flux producing torque is at its positive limit.
- Bit 2 [0 Ia from +] indicates that torque producing current is limited to zero from the positive direction - refer to Par 353 [Iq Actual Lim].
- Bit 3 [+Iq Calc] indicates the calculation for torque producing current has reached its positive limit.
- Bit 4 [+Current Lim] indicates that the current reference has reached the positive Motor Current Limit set by Par 356 [Mtr Current Lim].
- Bit 5 [+DriveProtOL] indicates that the current reference has reached the positive current limit set by the Open Loop Inverter Overload, shown in Par 343 [OL OpnLp CurrLim].
- Bit 6 [+DriveProtCL] indicates that the current reference has reached the positive current limit set by the Closed Loop Inverter Overload, shown in Par 344 [OL ClsLp CurrLim].
- Bit 8 [+Torq Limit] indicates that the torque reference has reached the Positive Torque Limit set by Par 125 [Torque Pos Limit].
- Bit 9 [Mtrng PwrLim] indicates that the torque reference is being limited by the Motoring Power Limit set by Par 127 [Mtring Power Lim].
- Bit 10 [+Torq CurLim] indicates that current reference has reached the Actual Torque Producing Current Limit set by Par 353 [Iq Actual Lim].
- Bit 11 [Atune Tq Lim] indicates that the torque reference is being limited by Par 129 [Atune Trq Ref].
- Bit 12 [+0 Torq Ena] indicates that the torque reference is limited to zero because Par 157 [Logic Ctrl State] bit 9 [Torq Ref En] is off.
- Bit 13 [+0 Curr Ena] indicates that the current reference is limited to zero because Par 157 [Logic Ctrl State] bit 11 [CurrRef En] is off.
- Bit 14 [Speed Limit] indicates the collective status of all speed limitations.
- Bit 15 [Current Lim] indicates the collective status of all current limitations
- Bit 16 [-MCS Iq Lim] indicates that torque producing current is at its negative limit.
- Bit 17 [-MCS Ws Lim] indicates that flux producing torque is at its negative limit.
- Bit 18 [0 Ia from -] indicates that torque producing current is limited to zero from the negative direction - refer to Par 353 [Iq Actual Lim].
- Bit 19 [-Iq Calc] indicates the calculation for torque producing current has reached its negative limit.
- Bit 20 [-Current Lim] indicates that the current reference has reached the negative Motor Current Limit set by Par 356 [Mtr Current Lim].
- Bit 21 [-DriveProtOL] indicates that the current reference has reached the negative current limit set by the Open Loop Inverter Overload, shown in Par 343 [OL OpnLp CurrLim].
- Bit 22 [-DriveProtCL] indicates that the current reference has reached the negative current limit set by the Closed Loop Inverter Overload, shown in Par 344 [OL ClsLp CurrLim].
- Bit 24 [-Torq Limit] indicates that the torque reference has reached the Negative Torque Limit set by Par 126 [Torque Neg Limit].
- Bit 25 [Regen PwrLim] indicates that the torque reference is being limited by the Regenerative Power Limit set by Par 128 [Regen Power Lim].
- Bit 26 [-Torq CurLim] indicates that current reference has reached the Actual Torque Producing Current Limit set by Par 353 [Iq Actual Lim].
- Bit 27 [Bus Reg Tq Lim] indicates the bus voltage regulator is active and limiting the regenerative torque.
- Bit 28 [-0 Torq Ena] indicates that the torque reference is limited to zero because Par 157 [Logic Ctrl State] bit 9 [Torq Ref En] is off.
- Bit 29 [-0 Curr Ena] indicates that the current reference is limited to zero because Par 157 [Logic Ctrl State] bit 11 [CurrRef En] is off.
- Bit 30 [Torque Limit] indicates the collective status of all torque limitations.
- Bit 31 [Power Limit] indicates the collective status of all power limitations.

Options	Power Limit	Torque Limit	-0 Curr Enbl	-0 Trq Enbl	Bus Reg Lim	-Trq CurLim	Regen PwrLim	-Trq Limit	SpdReg Open	-DriveProtCL	-DriveProtOL	-Current Lim	-Iq Calc	0 Iq from -	-MCS Iq Lim	-MCS Iq Lim	Current Lim	Speed Limit	+0 Curr Enbl	+0 Trq Enbl	Atun Trq Lim	+Trq CurLim	Mtrng PwrLim	+Trq Limit	+SpdReg Open	+DriveProtCL	+DriveProtOL	+Current Lim	+Iq Calc	0 Iq from +	+MCS Ws Lim	+MCS Iq Lim
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

305	**Mtr Trq Curr Ref** Displays the torque current reference present at the output of the current rate limiter. 100% is equal to 1 per unit (pu) rated motor torque.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu	RO	Real

No.	Name Description	Values	Linkable	Read-Write	Data Type
306	**DC Bus Voltage** Displays measured bus voltage. Note: The maximum value was increased from 1000.0000 to 1170.0000 for firmware version 3.01.	Units: Volt Default: 0.0000 Min/Max: 0.0000/1170.0000		RO	Real
307	**Output Voltage** Displays RMS line-to-line fundamental motor voltage. This data is averaged and updated every 50 milliseconds.	Units: Volt Default: 0.00 Min/Max: 0.00/3000.00		RO	Real
308	**Output Current** Displays measured RMS motor current.	Units: Amps Default: 0.00 Min/Max:: 0.00/10000.00		RO	Real
309	**% Motor Flux** Displays the motor flux in % of nominal.	Units: % Default: 0.0 Min/Max: 0.0/100.0 Scale: 100 = 4096		RO	16-bit Integer
310	**Output Freq** Displays the motor stator frequency.	Units: Hz Default: 0.00 Min/Max: -/+250.00		RO	Real
311	**Output Power** Motor Power is the calculated product of the torque reference and motor speed feedback. A 125mS filter is applied to this result. Positive values indicate motoring power; negative values indicate regenerative power. Note: The units were changed from kW to Hp for firmware version 2.03.	Units: Hp Default: 0.00 Min/Max: -/+9999.00		RO	Real
312	**MotorFluxCurr FB** Displays the measured per unit motor flux producing current.	Units: P.U. Default: 0.0000 Min/Max:: 0.0000/1.0000		RO	Real
313	**Heatsink Temp** Displays the measured temperature of the drive's heatsink.	Units: degC Default: 0.0000 Min/Max: -30.0000/200.0000		RO	Real
314	**VPL Firmware Rev** Displays the major and minor revision levels of the drive's Velocity Position Loop (VPL) software. Notes: The default value was changed from 1.11 to 2.03 for firmware version 2.03. The default value was changed from 2.03 to 3.01 for firmware version 3.01.	Default: 1.03 Min/Max: 0.01/99.99 Scale: 00		RO	16-bit Integer
315	**VPL Build Number** Displays the build number of the drive's Velocity Position Loop (VPL) software. Note: The default value was changed from 8001 to 1 for firmware version 2.03.	Default: 1 Min/Max:: 1/10000		RO	16-bit Integer
316	**SynchLink Status** Indicates status of SynchLink functions. • Bit 0 [FB Opt Prsnt] indicates the presence of an optional feedback daughter card. • Bit 1 [Encdr0 Prsnt] indicates the presence of encoder 0. • Bit 2 [Encdr1 Prsnt] indicates the presence of encoder 1. • Bit 3 [In Sync] indicates SynchLink communications is synchronized. • Bit 4 [Tx Active] indicates TX frames are being transmitted downstream from this node. • Bit 5 [Rx Active] indicates RX frames are being received from nodes upstream. • Bit 15 [Rx Data Enbl] indicates received data is being updated. Note: Bit 8 [Open Wire] was changed to [Reserved], and bit 12 [SOB Present] and bit 14 [Reset Req'd] were added for firmware 2.04.				

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Rx Data Enbl	Reset Req'd	Reserved	SOB Present	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Rx Active	Tx Active	In Sync	Encdr1 Prsnt	Encdr0 Prsnt	FB Opt Prsnt
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

317	**SL System Time** Displays the SynchLink system time counter.	Units: µSec Default: 0 Min/Max: 0/1048575		RO	32-bit Integer
318	**Posit Spd Output** Final output of the position regulator.	Units: RPM Default: 0.0000 Min/Max: -/+14112.0000 Scale: Par 4 [Motor NP RPM] = 1.0pu		RO	Real
319	**Selected Trq Ref** Displays the actual selected torque reference value after Par 110 [Speed/TorqueMode].	Units: PU Default: 0.0 Min/Max: -/+8.0 pu		RO	Real

No.	Name Description	Values			Linkable	Read-Write	Data Type

320 **Exception Event1**

Indicates the presence of certain drive anomalies. In some cases, you may configure the drive's response to these events by entering values in the parameters of the fault/alarm configuration group of the utility file.

Options	PWM Asynchro	Precharge Er	MC Firmware	PWM Short	VPL/MC Comm	OverCurrent	Ground Fault	Trans Desat	Bus OverVolt	MC Commissn	Over Freq	Inertia Test	DSP Error	DSP Mem Err	Ext Fault In	Inv OL Trip	Inv OL Pend	Inv TempTrip	Inv TempPend	Motor Stall	Mtr OL Pend	Mtr OL Trip	Power Loss	SLink Comm	SLink HW	Ctrl EE Mem	FB Opt1 Loss	FB Opt0 Loss	Encdr1 Loss	Encdr0 Loss	SpdRef Decel	Abs OverSpd
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

321 **Exception Event2**

Indicates the presence of certain drive anomalies. Configure the drive's response to these events by entering values in the parameters of the fault/alarm configuration group of the utility file.

Options	Lgx LinkChng	Lgx Closed	Lgx Timeout	Lgx OutOfRun	NetLoss DPI6	NetLoss DPI5	NetLoss DPI4	NetLoss DPI3	NetLoss DPI2	NetLoss DPI1	DPI Loss P6	DPI Loss P5	DPI Loss P4	DPI Loss P3	DPI Loss P2	DPI Loss P1	No Ctrl Devc	MC CML Fail	Interp Synch	EnableHealth	NonCnfgAlarm	VoltFdbkLoss	BusUnderVolt	RidethruTime	Slink Mult	PowerEE Cksm	BrakeOL Trip	PSC Sys Flt2	PSC Sys Flt1	Ctrl EE Cksm	MC Command	+/- 12v Pwr
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

322 **Exception Event3**

Indicates the presence of certain drive anomalies. Configure the drive's response to these events by entering values in the parameters of the fault/alarm configuration group of the utility file.

- Bit 11 [HH HW Ver] is sed to indicate a High Horsepower hardware version fault
- Bit 12 [HH CurUnblnc] is used to indicate a High Horsepower output current unbalanced fault
- Bit 13 [HH VltUnblnc] is used to indicate a High Horsepower Bus voltage unbalanced fault
- Bit 29 [AnlgIn1 Loss] is used to indicate an Analog Input 1 loss fault
- Bit 30 [AnlgIn2 Loss] is used to indicate an Analog Input 2 loss fault
- Bit 31 [AnlgIn3 Loss] is used to indicate an Analog Input 3 loss fault

Notes: Bits 16, 20 and 23 were added for firmware version 2.04. Bits 11, 12, 13, 29, 30 and 31 were added for firmware version 3.01.

Options	AnlgIn3 Loss	AnlgIn2 Loss	AnlgIn1 Loss	Reserved	Reserved	Reserved	Reserved	Reserved	NonCnfgAlarm	Reserved	Reserved	Posit Err	-Hrd OvrTrvl	+Hrd OvrTrvl	-Sft OvrTrvl	+Sft OvrTrvl	Reserved	Reserved	HH VltUnblnc	HH CurUnblnc	HH HW Ver	HH PwrBdTemp	HH PwrEE Er	HHPrChrgCntc	HH PwrBd Prc	HH Drv Ovrld	HH FanFdbkLs	HH BusWtchDg	HH BusCRC Er	HH BusLinkLs	HH BusComDly	HH InPhaseLs
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

323 **Fault Status 1**

Indicates the occurrence of exception events that have been configured as fault conditions. These events are from Par 320 [Exception Event1].

Options	PWM Asynchro	Precharge Er	MC Firmware	PWM Short	VPL/MC Comm	OverCurrent	Ground Fault	Ground Fault	Bus OverVolt	MC Commissn	Over Freq	Inertia Test	DSP Error	DSP Mem Err	Ext Fault In	Inv OL Trip	Inv OL Pend	Inv OTmpTrip	Inv OTmpPend	Motor Stall	Mtr OL Pend	Mtr OL Trip	Power Loss	SLink Comm	SLink HW	Ctrl EE Mem	FB Opt1 Loss	FB Opt0 Loss	Encdr1 Loss	Encdr0 Loss	SpdRef Decel	Abs OverSpd
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

324 **Fault Status 2**

Indicates the occurrence of exception events that have been configured as fault conditions. These events are from Par 321 [Exception Event2].

Options	Lgx LinkChng	Lgx Closed	Lgx Timeout	Lgx OutOfRun	NetLoss DPI6	NetLoss DPI5	NetLoss DPI4	NetLoss DPI3	NetLoss DPI2	NetLoss DPI1	DPI Loss P6	DPI Loss P5	DPI Loss P4	DPI Loss P3	DPI Loss P2	DPI Loss P1	No Ctrl Devc	Reserved	Reserved	EnableHealth	Non Cnfg Alarm	VoltFdbkLoss	BusUnderVolt	RidethruTime	Slink Mult	PowerEE Cksm	BrakeOL Trip	PSC Sys Flt2	PSC Sys Flt1	Ctrl EE Cksm	MC Command	+/- 12v Pwr
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values			Linkable	Read-Write	Data Type

325 **Fault Status 3**

Indicates the occurrence of exception events that have been configured as fault conditions. These events are from Par 322 [Exception Event3].

- Bit 11 [HH HW Ver] is sed to indicate a High Horsepower hardware version fault
- Bit 12 [HH CurUnbInc] is used to indicate a High Horsepower output current unbalanced fault
- Bit 13 [HH VltUnbInc] is used to indicate a High Horsepower Bus voltage unbalanced fault
- Bit 29 [AnlgIn1 Loss] is used to indicate an Analog Input 1 loss fault
- Bit 30 [AnlgIn2 Loss] is used to indicate an Analog Input 2 loss fault
- Bit 31 [AnlgIn3 Loss] is used to indicate an Analog Input 3 loss fault

Notes: Bits 16, 20 and 23 were added for firmware version 2.04. Bits 11, 12, 13, 29, 30 and 31 were added for firmware version 3.01.

Options	AnlgIn3 Loss	AnlgIn2 Loss	AnlgIn1 Loss	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	HH VltUnbInc	HH CurUnbInc	HH HW Ver	Reserved	HH PwrEE Er	HHPrChrgCntc	HH PwrBd Prc	HH Drv Ovrld	HH FanFdbkLs	HH BusWtchDg	HH BusCRC Er	HH BusLinkLs	HH BusComDly	HH InPhaseLs
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		

0 = False
1 = True

326 **Alarm Status 1**

Indicates the occurrence of exception events that have been configured as alarm conditions. These events are from Par 320 [Exception Event1].

Options	NonCnfg Fault	Precharge Er	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	Inertia Test	NonCnfg Fault	NonCnfg Fault	Ext Fault In	Inv OL Trip	Inv OL Pend	Non Cnfg Fault	Inv TempPend	Motor Stall	Mtr OL Pend	Mtr OL Trip	NonCnfgFault	SLink Comm	NonCnfgFault	NonCnfgFault	FB Opt 1 Loss	FB Opt0 Loss	Encdr1 Loss	Encdr0 Loss	NonCnfgFault	NonCnfgFault
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		

0 = False
1 = True

327 **Alarm Status 2**

Indicates the occurrence of exception events that have been configured as alarm conditions. These events are from Par 321 [Exception Event2].

Options	Lgx LinkChng	Lgx Closed	Lgx Timeout	Lgx OutOfRun	NetLoss DPI6	NetLoss DPI5	NetLoss DPI4	NetLoss DPI3	NetLoss DPI2	NetLoss DPI1	DPI Loss P6	DPI Loss P5	DPI Loss P4	DPI Loss P3	DPI Loss P2	DPI Loss P1	NonCnfg Fault	MC CML Fail	Interp Synch	EnableHealth	Runtime Data	VoltFdbkLoss	BusUnderVolt	NonCnfg Fault	Slink Mult	NonCnfg Fault	BrakeOL Trip	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	MC Command	NonCnfg Fault
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		

0 = False
1 = True

328 **Alarm Status 3**

Indicates the occurrence of exception events that have been configured as alarm conditions. These events are from Par 322 [Exception Event3].

- Bit 11 [HH HW Ver] is used to indicate a non-configurable High Horsepower hardware version fault
- Bit 12 [HH CurUnbInc] is used to indicate a non-configurable High Horsepower output current unbalanced fault
- Bit 13 [HH VltUnbInc] is used to indicate a non-configurable High Horsepower Bus voltage unbalanced fault
- Bit 29 [AnlgIn1 Loss] is used to indicate a non-configurable Analog Input 1 loss fault
- Bit 30 [AnlgIn2 Loss] is used to indicate a non-configurable Analog Input 2 loss fault
- Bit 31 [AnlgIn3 Loss] is used to indicate a non-configurable Analog Input 3 loss fault

Notes: Bits 16, 20 and 23 were added for firmware version 2.04. Bits 11, 12, 13, 29, 30 and 31 were added for firmware version 3.01.

Options	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	Reserved	Reserved	Reserved	Reserved	Reserved	Stahl Optics	Reserved	Reserved	Posit Err	-Hrd OvrTrvl	+Hrd OvrTrvl	-Sft OvrTrvl	+Sft OvrTrvl	Reserved	Reserved	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	NonCnfg Fault	HH InPhaseLs
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		

0 = False
1 = True

329 **Fault TP Sel**

Enter or write a value to select Fault data displayed in Par 330 [Fault TP Data].

Default: 0 = "Zero"

Options:

0 = "Zero"	12 = "Mtr OL Input"
1 = "Abs OverSpd"	13 = "Mtr OL Outpt"
2 = "EE Pwr State"	14 = "MtrStallTime"
3 = "Inv DataStat"	15 = "MC Handshake"
4 = "Run Time Err"	16 = "VPL Handshak"
5 = "LowBus Thres"	17 = "MC Diag"
6 = "LowBus Detct"	18 = "PwrLossState"
7 = "PwrLosBusVlt"	19 = "12 volt loss"
8 = "MCPLosBusVlt"	20 = "PwrEE Chksum"
9 = "MC Flt Reset"	21 = "Db Read Cnt1"
10 = "Ext Flt Stat"	22 = "Db Read Cnt2"
11 = "VPL TaskErr"	23 = "Db Read Cnt3"

330 **Fault TP Data**

Displays the data selected by Par 329 [Fault TP Sel].

Default: 0
Min/Max: -/+2200000000

RO | Real

No.	Name Description	Values	Linkable	Read-Write	Data Type
331	**LstFaultStopMode** Displays the action taken by the drive during the last fault. When a fault occurs, an action is taken as a result of that fault.	Default: 0 = "Ignore" Options: 0 = "Ignore" 3 = "Flt RampStop" 1 = "Alarm" 4 = "FltCurLimStop" 2 = "FltCoastStop"			

332 700L EventStatus

Indicates the presence of certain drive anomalies for PowerFlex 700L (LiquiFlo) drive.
Bit 0 [Dsat Phs U1] indicates that the primary structure detected a Dsat on phase U.
Bit 1 [Dsat Phs V1] indicates that the primary structure detected a Dsat on phase V.
Bit 2 [Dsat Phs W] indicates that the primary structure detected a Dsat on phase W.
Bit 3 [Ovr Current1] indicates that the primary structure detected an over current.
Bit 4 [Ovr Volt1] - indicates that the primary structure detected an over voltage.
Bit 5 [Asym DcLink1] indicates that the primary structure detected an unbalanced DC Link.
Bit 6 [Pwr Suply1]indicates that the primary structure detected a power supply failure.
Bit 7 [HW Disable1] indicates that the primary structure detected a hardware disable.
Bit 8 [Latch Err1] indicates that the primary structure fault was generated but no indicating bit was set.
Bit 14 [Cnv NotLogin] the converter was expected but none logged in.
Bit 15 [Cnv NotStart] the converter was commanded to start but did not become active.
Bit 16 [Dsat Phs U2] the second structure detected a Dsat on phase U.
Bit 17 [Dsat Phs V2] the second structure detected a Dsat on phase V.
Bit 18 [Dsat Phs W2] the second structure detected a Dsat on phase W.
Bit 19 [Ovr Current2] the second structure detected an over current.
Bit 20 [Ovr Volt2] the second structure detected an over voltage.
Bit 21 [Asym DcLink2] the second structure detected an unbalanced DC Link.
Bit 22 [Pwr Suply2] the second structure detected a power supply failure.
Bit 23 [HW Disable2] the second structure detected a hardware disable.
Bit 24 [Latch Err2] the second structure fault was generated but no indicating bit was set.
Note: This parameter was added for firmware version 2.03.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Latch Err2	HW Disable2	Pwr Suply2	Asym DcLink2	Ovr Volt2	Ovr Current2	Dsat Phs W2	Dsat Phs V2	Dsat Phs U2	Cnv NotStart	Cnv NotLogin	Reserved	Reserved	Reserved	Reserved	Reserved	Latch Err1	HW Disable1	Pwr Suply1	Asym DcLink1	Ovr Volt1	Ovr Current1	Dsat Phs W1	Dsat Phs V1	Dsat Phs U1	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1 = True

333 700L FaultStatus

Indicates the occurrence of exception events that have been configured as fault conditions for PowerFlex 700L (LiquiFlo) drive.
Bit 0 [Dsat Phs U1] indicates that the primary structure detected a Dsat on phase U.
Bit 1 [Dsat Phs V1] indicates that the primary structure detected a Dsat on phase V.
Bit 2 [Dsat Phs W] indicates that the primary structure detected a Dsat on phase W.
Bit 3 [Ovr Current1] indicates that the primary structure detected an over current.
Bit 4 [Ovr Volt1] indicates that the primary structure detected an over voltage.
Bit 5 [Asym DcLink1] indicates that the primary structure detected an unbalanced DC Link.
Bit 6 [Pwr Suply1] indicates that the primary structure detected a power supply failure.
Bit 7 [HW Disable1] indicates that the primary structure detected a hardware disable.
Bit 8 [Latch Err1] indicates that the primary structure fault was generated but no indicating bit was set.
Bit 14 [Cnv NotLogin] indicates that the converter expected but none logged in.
Bit 15 [Cnv NotStart] indicates that the converter commanded to start but did not become active.
Bit 16 [Dsat Phs U2] indicates that the second structure detected a Dsat on phase U.
Bit 17 [Dsat Phs V2] indicates that the second structure detected a Dsat on phase V.
Bit 18 [Dsat Phs W2] indicates that the second structure detected a Dsat on phase W.
Bit 19 [Ovr Current2] indicates that the second structure detected an over current.
Bit 20 [Ovr Volt2] indicates that the second structure detected an over voltage.
Bit 21 [Asym DcLink2] indicates that the second structure detected an unbalanced DC Link.
Bit 22 [Pwr Suply2] indicates that the second structure detected a power supply failure.
Bit 23 [HW Disable2] indicates that the second structure detected a hardware disable.
Bit 24 [Latch Err2] indicates that the second structure fault was generated but no indicating bit was set.
Note: This parameter was added for firmware version 2.03.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Latch Err2	HW Disable2	Pwr Suply2	Asym DcLink2	Ovr Volt2	Ovr Current2	Dsat Phs W2	Dsat Phs V2	Dsat Phs U2	Cnv NotStart	Cnv NotLogin	Reserved	Reserved	Reserved	Reserved	Reserved	Latch Err1	HW Disable1	Pwr Suply1	Asym DcLink1	Ovr Volt1	Ovr Current1	Dsat Phs W1	Dsat Phs V1	Dsat Phs U1	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1 = True

No.	Name Description	Values			Linkable	Read-Write	Data Type
334	**700L AlarmStatus** Indicates the occurrence of exception events that have been configured as alarm conditions for PowerFlex 700L (LiquiFlo) drive. Bit 0 [NonCnfgFault] Not configured as alarm. Bit 1 [NonCnfgFault] Not configured as alarm. Bit 2 [NonCnfgFault] Not configured as alarm. Bit 3 [NonCnfgFault] Not configured as alarm. Bit 4 [NonCnfgFault] Not configured as alarm. Bit 5 [NonCnfgFault] Not configured as alarm. Bit 6 [NonCnfgFault] Not configured as alarm. Bit 7 [NonCnfgFault] Not configured as alarm. Bit 8 [NonCnfgFault] Not configured as alarm. Bit 14 [NonCnfgFault] Not configured as alarm. Bit 15 [NonCnfgFault] Not configured as alarm. Bit 16 [NonCnfgFault] Not configured as alarm. Bit 17 [NonCnfgFault] Not configured as alarm. Bit 18 [NonCnfgFault] Not configured as alarm. Bit 19 [NonCnfgFault] Not configured as alarm. Bit 20 [NonCnfgFault] Not configured as alarm. Bit 21 [NonCnfgFault] Not configured as alarm. Bit 22 [NonCnfgFault] Not configured as alarm. Bit 23 [NonCnfgFault] Not configured as alarm. Bit 24 [NonCnfgFault] Not configured as alarm. Note: This parameter was added for firmware version 2.03.						

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	NonCnfgFault	NonCnfgFault	NonCnfgFault	NonCnfgFault	NonCnfgFault	NonCnfgFault	NonCnfgFault	NonCnfgFault	NonCnfgFault	NonCnfgFault	NonCnfgFault	Reserved	Reserved	Reserved	Reserved	Reserved	NonCnfgFault	NonCnfgFault	NonCnfgFault	NonCnfgFault	NonCnfgFault	NonCnfgFault	NonCnfgFault	NonCnfgFault
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

335	**Abs OverSpd Lim** Sets an incremental speed above Par 76 [Fwd Speed Limit] and below Par 75 [Rev Speed Limit] that is allowable before the drive indicates its speed is out of range.	Units: Default: Min/Max: Scale:	RPM 352.8000 0.0000/1750.0000 Par 4 [Motor NP RPM] = 1.0pu		RW	Real
336	**Motor OL Factor** Sets the minimum level of current that causes a motor overload trip under continuous operation. Current levels below this value will not result in an overload trip. For example, a service factor of 1.15 implies continuous operation up to 115% of nameplate motor current.	Units: Default: Min/Max:	P.U. 1.1500 1.0000/2.0000		RW	Real
337	**Mtr I2T Curr Min** Sets the minimum current threshold for the motor overload (I^2T) function. The value indicates minimum current at the minimum speed, Par 338 [Mtr I2T Spd Min], and these are the first current/speed breakpoint. From this point the current threshold is linear to the value specified by Par 336 [Motor OL Factor].	Units: Default: Min Max:	P.U. 0.5000 0.0500/2.0000		RW	Real
338	**Mtr I2T Spd Min** Sets the minimum speed for the motor overload (I^2T) function. The value indicates minimum speed below the minimum current threshold Par 337 [Mtr I2T Curr Min], and these are the first current/speed breakpoint. From this point the current threshold is linear to the value specified by the motor service factor Par 336 [Motor OL Factor]. For more information, please see Motor Overload on page C-5.	Units: Default: Min/Max:	P.U. 1.0000 0.0500/1.0000		RW	Real
339	**Mtr I2T Calibrat** Sets the current calibration level for the motor overload (I^2T) function. The value indicates the current level that the drive will fault at this current in 60 seconds.	Units: Default: Min/Max:	P.U. 2.0000 1.1000/4.0000		RW	Real
340	**Mtr I2T Trp ThrH** Displays the trip threshold current for the motor overload (I^2T) function. The value depends on the motor speed, and is calculated from the minimum current Par 337 [Mtr I2T Curr Min], the minimum speed [Mtr I2T Spd Min] and the motor service factor Par 336 [Motor OL Factor].	Units: Default: Min/Max:	P.U. 1.1500 0.0500/2.0000		RO	Real
341	**Mtr I2T Count** The accumulator for Motor Overload detection (Motor I2T function). When the motor runs at the over rated motor current, the accumulator starts counting up. If the motor runs at below rated motor current, the accumulator counts down. If the value of this parameter exceeds 0.5, the Motor Overload Pending alarm (fault 12) occurs. If the value of this parameter exceeds 1.0, the Motor Overload Trip fault (fault 11) occurs. The value of this parameter is saved in non-volatile memory after power-down if Par 153 [Control Options], bit20 [Motor OL Retention} is on. Toggling bit 20 of Par 153 [Control Options] clears the value of this parameter. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	0.0 0.0/1.5		RO	Real

No.	Name Description	Values		Linkable	Read-Write	Data Type
343	**OL OpnLp CurrLim** Displays the current limit set by the Open Loop Inverter Overload (OL) function. This function sets this current limit based on stator current feedback and the current ratings of the drive - continuous and short term (three-second rating). Typically the drive will have a sixty-second rating of 110% of continuous current and a three-second rating at 150% of the continuous. Under normal operating conditions, the open loop function sets this current limit to the short term (three-second) rating. If the function detects an overload, it lowers the limit to the continuous level. After a period of time (typically one to three minutes), the function returns the limit to the short term rating.	Units: Default: Min/Max:	P.U. 8.0000 0.0000/8.0000		RO	Real
344	**OL ClsLp CurrLim** Displays the current limit set by the Closed Loop Inverter Overload (OL) function. This function will set a current limit level based on the values in Par 355 [Iq Ref Limited], Par 313 [Heatsink Temp] and the thermal characteristics of the drive. Under normal operating conditions, the function typically sets the limit at 250% of the continuous drive rating. If the function determines that the power device junction temperature is approaching maximum, it will reduce this limit to the level required to prevent additional heating of the inverter. This level could be as low as the continuous rating of the drive. If the inverter temperature decreases, the function will raise the limit to a higher level. Disable this protection by setting bit 13 [OL ClsLpDsbl] of Par 153 [Control Options].	Units: Default: Min/Max:	P.U. 8.0000 0.0000/8.0000		RO	Real
345	**Drive OL JnctTmp** Displays the calculated junction temperature of the power semiconductors in the inverter. The calculation uses the values of Par 313 [Heatsink Temp], Par 355 [Iq Ref Limited], and inverter thermal characteristics contained in the power EE memory. If this value exceeds the maximum junction temperature (visible in Par 348 [Drive OL TP Data] when Par 347 [Drive OL TP Sel] option 12 "fJunTmprMax" is selected), two faults occur: Inverter Overtemperature Fault (fault code 15), and Junction Overtemperature Fault - indicated by bit 7 [Jnc OverTemp] of Par 346 [Drive OL Status].	Units: Default: Min/Max:	degC 0.0000 -50.0000/300.0000		RO	Real
346	**Drive OL Status** Indicates the status of various overload (OL) conditions. • Bit 0 [NTC Shorted] indicates the Negative Temperature Coefficient (NTC) device has a short circuit. • Bit 1 [NTC Open] indicates the NTC has an open circuit. • Bit 2 [HS OverTemp] indicates heatsink temperature is above 105C for ratings 1.1-11.0A, 115C for 14-34A, 100C for 40-52A. • Bit 3 [HS Pending] indicates heatsink temperature is above 95C for ratings 1.1 -11A, 105C for 14- 34A, 90C for 40- 52A. • Bit 4 [IT Trip] indicates the drive has exceed the 3 second rating of either the 150% normal duty rating or 200% of the heavy duty rating. • Bit 5 [IT Pending] indicates the drive OL integrator is at 50% of the time out time. • Bit 6 [IT Foldback] indicates the drive closed loop current limit is in a fold back condition. The value of the fold back is proportional to the calculated junction temperature. • Bit 7 [Jnc Over Temp] indicates the junction temperature has exceeded the maximum temperature for the power semiconductor device.					

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Jnc OverTemp	IT Foldback	IT Pending	IT Trip	HS Pending	HS OverTemp	NTC Open	NTC Shorted
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

347	**Drive OL TP Sel** Enter or write a value to select the drive overload data displayed in Par 348 [Drive OL TP Data]. Note: Option 44 "HH PwrBdTemp" was added for firmware version 2.04.	Default: Options:	0 = "Zero" 0 = "Zero" 1 = "fAbsIsCurr" 2 = "fDelta" 3 = "fAbsIqCurr" 4 = "fOL_l" 5 = "fOL_m" 6 = "fOL_k" 7 = "fOL_g" 8 = "fOL_intg" 9 = "fCL_intg" 10 = "fInvOLClim" 11 = "fJuncDegc" 12 = "fJunTmprMax" 13 = "f60sPUCur" 14 = "f60sAmp" 15 = "f3sPUCur" 16 = "f3sAmp" 17 = "fRatioInvMtr" 18 = "fRatioMtrInv" 19 = "iConvertStat" 20 = "fIgbtThres" 21 = "fIgbtSlope" 22 = "fIgbtEnergy" 23 = "fIgbtJuncase" 24 = "fIgbtWatts" 25 = "iIgbtPerMod" 26 = "fFdThres" 27 = "fFdSlope" 28 = "fFdJunCase" 29 = "fFdWatts" 30 = "fMaxHsDegc" 31 = "fCsImp" 32 = "fCsFltr" 33 = "fPwmHz" 34 = "fElecHz" 35 = "fModIdex" 36 = "fBoost" 37 = "fTotalWatts" 38 = "fHSDegc" 39 = "iAdconv" 40 = "Jct Temp" 41 = "Jct Tmp HiHp" 42 = "Jct Tmp Fwd" 43 = "HH Loss Intg" 44 = "HH PwrBdTemp"			
348	**Drive OL TP Data** Displays the value selected by Par 347 [Drive OL TP Sel].	Default: Min/Max:	0.0000 -/+2200000000.0000		RO	Real

No.	Name Description	Values		Linkable	Read-Write	Data Type
350	**Iq Actual Ref** Displays the value of motor current reference that is present at the output of the divide by flux calculation.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu		RO	Real
351	**Iq Ref Trim** Provides an external source to command, trim or offset the internal motor current reference. This value is summed with Par 350 [Iq Actl Ref] before the current limit is applied. Scaling is in per unit motor current.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu	✓	RW	Real
352	**Is Actual Lim** Displays the largest allowable stator motor current. The range of allowable motor current is limited by the maximum drive current. Scaling is in per unit motor current.	Units: Default: Min/Max:	P.U. 1.0000 0.0000/8.0000		RO	Real
353	**Iq Actual Lim** Displays the largest allowable torque producing (Iq) motor current. The range of allowable Iq motor current is limited by the maximum drive current and is adjusted by the motor flux current. Scaling is in per unit Iq motor current.	Units: Default: Min/Max:	P.U. 1.0000 0.0000/8.0000		RO	Real
354	**Iq Rate Limit** Enter the maximum rate of change for Current Reference, in per unit current / sec. Par 90 [Spd Reg BW] will be limited to 2/3 of this value.	Units: Default: Min/Max:	/Sec 1000.0000 5.0000/10000.0000	✓	RW	Real
355	**Iq Ref Limited** Displays the current reference output of the rate limiter.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu		RO	Real
356	**Mtr Current Lim** Sets the largest allowable motor stator current. The online maximum value of this parameter is Par 2 [Motor NP FLA]. The online minimum value is 105% of the current indicated in Par 488 [Flux Current].	Units: Default: Min/Max:	P.U. 1.5000 0.0000/Calculated	✓	RW	Real
357	**Curr Ref TP Sel** Enter or write a value to select current reference data displayed in Par 358 [Curr Ref TP Data].	Default: Options:	0 = "Zero" 0 = "Zero" 1 = "Iq Sum" 2 = "Iq Lim In" 3 = "Iq Lim Out" 4 = "Iq Rate Stat" 5 = "IqLmOutNoFil" 6 = "MtrCrLimStat" 7 = "Lim'dMtrCrLm" 8 = "Iq Act Limit" 9 = "Iq Cal Gain" 10 = "Min Lim Stat" 11 = "Iq Prescale" 12 = "IqtoIs Stat" 13 = 'Flux Status" 14 = "Flux LPF Out" 15 = "Is Per Unit" 16 = "Iq Actl +Lim" 17 = "Iq Actl -Lim" 18 = "Flx Filt Hld" 19 = "Inverse Flux"			
358	**Curr Ref TP Data** Sets the limit value for the motor torque producing current.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu		RO	Real
359	**Motor Flux Est** The Q-axis motor voltage is divided by the motor frequency while field weakening is active. This value is used to convert the torque command to a motor current (Iqs) command.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu		RO	Real
360	**Min Flux** Sets the smallest level of flux used to convert Par 303 [Motor Torque Ref] to a current reference above base speed.	Units: Default: Min/Max:	P.U. 0.2500 0.2500/1.0000	✓	RW	Real
361	**Flx LpassFilt BW** Sets the bandwidth of the low pass filter that adjusts the response of the flux estimate used in the torque to current conversion. Since the field time constant varies between motors, a better control response may be obtained by adjusting the filter time constant. Normally this parameter is not changed unless a significant disturbance occurs as the motor enters field weakening AND Par 360 [Min Flux] is less than 1 per unit.	Units: Default: Min/Max:	R/S 12.0000 0.5000/100.0000	✓	RW	Real
362	**Current Limit Gain** Sets the responsiveness of the current limit. This parameter should not be changed by the user. Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	250 0/10000		RW	16-bit Integer
363	**Ki Current Limit** Current Limit Integral gain. This gain is applied to the current limit error signal to eliminate steady state current limit error. A larger value increases overshoot during a step of motor current/load. This parameter should not be changed by the user. Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	1500 0/10000		RW	16-bit Integer
364	**Kd Current Limit** Current Limit Derivative gain. This gain is applied to the sensed motor current to anticipate a current limit condition. A larger value reduces overshoot of the current relative to the current limit value. This parameter should not be changed by the user. Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	500 0/10000		RW	16-bit Integer

No.	Name Description	Values		Linkable	Read-Write	Data Type
365 366 367	**Fdbk LsCnfg Pri** **Fdbj LsCnfg Alt** **Fdbk LsCnfgPosit** Enter a value to configure the drive's response to an Encoder 0/1 Loss exception event. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event.	Default: Default: Default: Options:	2 = "FltCoastStop" 1 = "Alarm" 1 = "Alarm" 1 = "Alarm" 2 = "FltCoastStop"			
368	**Cnv NotLogin Cfg** Configures the 700L drive's response when the active convertor is not logged-in via a DPI port. Note: This parameter was added for firmware version 3.01.	Default: Options:	2 = "FltCoastStop" 0 = "Ignore"" 1 = "Alarm" 2 = "FltCoastStop"			
369	**Brake OL Cnfg** Enter a value to configure the drive's response to a Brake Overload (OL) Trip exception event. This event is triggered when a Dynamic Brake (DB) overload condition occurs. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default: Options:	1 = "Alarm" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			
370	**HiHp InPhsLs Cfg** Selector for the input phase loss configuration. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit in response this event. Note: The default value was changed from 1 "Alarm" to 3 "Flt RampStop" for firmware version 3.01.	Default Options:	3 = "Flt RampStop" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			
371	**Mtr OL Trip Cnfg** Enter a value to configure the drive's response to a Motor Overload (OL) Trip exception event. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	2 = "FltCoastStop" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			
372	**Mtr OL Pend Cnfg** Enter a value to configure the drive's response to a Motor Overload (OL) Pending exception event. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	1 = "Alarm" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			
373	**Motor Stall Time** Enter a value to specify the time delay between when the drive detects a Motor Stall condition and when it declares the exception event.	Units: Default: Min/Max:	Sec 1.0000 0.1000/3000.0000	✓	RW	Real

No.	Name Description	Values		Linkable	Read-Write	Data Type
374	**Motor Stall Cnfg** Enter a value to configure the drive's response to a Motor Stall exception event. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	0 = "Ignore" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			
375	**Inv OT Pend Cnfg** Enter a value to configure the drive's response to a Inverter Over-Temperature (OT) Pending exception event. This event is triggered when the Inverter NTC (Temperature protection) function detects the heat-sink temperature reaches to the overload warning level. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	1 = "Alarm" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			
376	**Inv OL Pend Cnfg** Enter a value to configure the drive's response to an Inverter Overload (OL) Pending exception event. This event is triggered when one of the Inverter Protection Current-Over-Time functions (Open Loop or Closed Loop) detects current and temperature at warning levels. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	1 = "Alarm" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			
377	**Inv OL Trip Cnfg** Enter a value to configure the drive's response to an Inverter Overload (OL) Trip exception event. This event is triggered when one of the Inverter Protection Current-Over-Time functions (Open Loop or Closed Loop) detects current and temperature at a fault level. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event.	Default: Options:	1 = "Alarm" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop"			
378	**Interp Flt Cnfg** Enter a value to configure the drive's response to a position interpolator exception event. If the interpolator loses the synchronization pulse or is out of synch, this event occurs.	Default: Options:	1 = "Alarm" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			
379	**Ext Flt/Alm Cnfg** Enter a value to configure the drive's response to an External Input exception event. The event is triggered by a digital input that is configured for auxiliary fault or auxiliary aux fault by setting bit 11 [Aux Fault] or bit 12 [AuxFault Inv] in Par 825 [DigIn 1 Sel], Par 826 [DigIn 2 Sel] or Par 827 [DigIn 3 Sel]. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	2 = "FltCoastStop" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			

No.	Name Description	Values		Linkable	Read-Write	Data Type
381	**PreChrg Err Cnfg** Enter a value to configure the drive's response to a Precharge Error exception event. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event	Default: Options:	2 = "Alarm" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop"			
382	**MC Cmd Lim Cnfg** Enter a value to configure the drive's response to a Motor-Controller (MC) Command Limitation exception event. This event is triggered when the motor-controller detects limit of the command values used in the motor-controller, and returns the exception event to the Velocity Position Loop (VPL). • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event.	Default: Options:	2 = "Alarm" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop"			
383	**SL CommLoss Data** Enter a value to configures the drive's response to SynchLink communication loss. Refer to Par 902 [SL Error Status] for possible causes of communication loss. • Value 0 - Zero Data Resets data to zero • Value 1 - Last State Holds data in its last state	Default: Options:	1 = "Last State" 0 = "Zero Data" 1 = "Last State"			

ATTENTION: Risk of injury or equipment damage exists. Par 383 [SL CommLoss Data] lets you determine the action of the drive if communications are disrupted. By default this parameter causes the drive to hold the data in its last state. You can set this parameter so that the drive resets the data to zero. Precautions should be taken to ensure that the setting of this parameter does not create hazards of injury or equipment damage.

384	**SL CommLoss Cnfg** Enter a value to determine what is done with the data received from SynchLink when a communication loss occurs. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	2 = "FltCoastStop" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			

ATTENTION: Risk of injury or equipment damage exists. Par 384 [SL CommLoss Cnfg] lets you determine the action of the drive if communications are disrupted. By default this parameter causes the drive fault and coast to a stop. You can set this parameter so that the drive continues to run. Precautions should be taken to ensure that the setting of this parameter does not create hazards of injury or equipment damage.

385	**Lgx CommLossData** Enter a value to configure what drive does with the data received from the DriveLogix controller when the connection is closed or times out. • Value 0 - Zero Data Resets data to zero • Value 1 - Last State Holds data in its last state	Default: Options:	1 = "Last State" 0 = "Zero Data" 1 = "Last State"			

ATTENTION: Risk of injury or equipment damage exists. Par 385 [Lgx CommLossData] lets you determine the action of the drive if communications are disrupted. By default this parameter causes the drive to hold the data in its last state. You can set this parameter so that the drive resets the data to zero. Precautions should be taken to ensure that the setting of this parameter does not create hazards of injury or equipment damage.

No.	Name Description	Values		Linkable	Read-Write	Data Type
386	**Lgx OutOfRunCnfg** Enter a value to configure the drive's response to the DriveLogix processor being in Non-Run mode. Non-Run modes include Program, Remote-Program and Faulted. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	2 = "FltCoastStop" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			
	ATTENTION: Risk of injury or equipment damage exists. Par 386 [Lgx OutOfRunCnfg] lets you determine the action of the drive if communications are disrupted. By default this parameter causes the drive fault and coast to a stop. You can set this parameter so that the drive continues to run. Precautions should be taken to ensure that the setting of this parameter does not create hazards of injury or equipment damage.					
387	**Lgx Timeout Cnfg** Enter a value to configure the drive's response to a Controller to Drive connection timeout, as detected by the drive. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	2 = "FltCoastStop" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			
	ATTENTION: Risk of injury or equipment damage exists. Par 387 [Lgx Timeout Cnfg] lets you determine the action of the drive if communications are disrupted. By default this parameter causes the drive fault and coast to a stop. You can set this parameter so that the drive continues to run. Precautions should be taken to ensure that the setting of this parameter does not create hazards of injury or equipment damage.					
388	**Lgx Closed Cnfg** Enter a value to configure the drive's response to the controller closing the Controller to Drive connection. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	2 = "FltCoastStop" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			
	ATTENTION: Risk of injury or equipment damage exists. Par 388 [Lgx Closed Cnfg] lets you determine the action of the drive if communications are disrupted. By default this parameter causes the drive fault and coast to a stop. You can set this parameter so that the drive continues to run. Precautions should be taken to ensure that the setting of this parameter does not create hazards of injury or equipment damage.					

No.	Name Description	Values		Linkable	Read-Write	Data Type
389	**Lgx LinkChngCnfg** Enter a value to configure the drive's response to Controller to Drive default links being removed. A default link is a link automatically set up when a communication format is selected for the Controller to Drive connection. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	2 = "FltCoastStop" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			

ATTENTION: Risk of injury or equipment damage exists. Par 389 [Lgx LinkChngCnfg] lets you determine the action of the drive if communications are disrupted. By default this parameter causes the drive fault and coast to a stop. You can set this parameter so that the drive continues to run. Precautions should be taken to ensure that the setting of this parameter does not create hazards of injury or equipment damage.

390	**SL MultErr Cnfg** Enter a value to configure the Drive Module's response to SynchLink Multiplier error. Refer to Par 927 [SL Mult State] for possible causes for multiplier errors. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	2 = "FltCoastStop" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			

ATTENTION: Risk of injury or equipment damage exists. Par 390 [SL MultErr Cnfg] lets you determine the action of the drive if communications are disrupted. By default this parameter causes the drive fault and coast to a stop. You can set this parameter so that the drive continues to run. Precautions should be taken to ensure that the setting of this parameter does not create hazards of injury or equipment damage.

391	**DPI CommLoss Cfg** Enter a value to configure the drive's response to the failure of a DPI port. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	2 = "FltCoastStop" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			

ATTENTION: Risk of injury or equipment damage exists. Par 391 [DPI CommLoss Cfg] lets you determine the action of the drive if communications are disrupted. By default this parameter causes the drive fault and coast to a stop. You can set this parameter so that the drive continues to run. Precautions should be taken to ensure that the setting of this parameter does not create hazards of injury or equipment damage.

No.	Name Description	Values		Linkable	Read-Write	Data Type
392	**NetLoss DPI Cnfg** Enter a value to configure the drive's response to communication fault from a network card at a DPI port. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	2 = "FltCoastStop" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			
	ATTENTION: Risk of injury or equipment damage exists. Par 392 [NetLoss DPI Cnfg] lets you determine the action of the drive if communications are disrupted. By default this parameter causes the drive fault and coast to a stop. You can set this parameter so that the drive continues to run. Precautions should be taken to ensure that the setting of this parameter does not create hazards of injury or equipment damage.					
393	**BusUndervoltCnfg** Enter a value to configure the drive's response to DC Bus voltage falling below the minimum value. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	1 = "Alarm" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			
394	**VoltFdbkLossCnfg** Enter a value to configure the drive's response to a communication error between Motor Control (MC) and the motor voltage feedback board. • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event.	Default: Options:	2 = "FltCoastStop" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop"			
395	**+Sft OvrTrvlCnfg** • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	1 = "Alarm" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			
396	**-Sft OvrTrvlCnfg** • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	1 = "Alarm" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			

No.	Name Description	Values		Linkable	Read-Write	Data Type
397	**+Hrd OvrTrvlCnfg** • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	1 = "Alarm" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			
398	**-Hrd OvrTrvlCnfg** • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	1 = "Alarm" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			
399	**Position ErrCnfg** • Value 0 - Ignore configures the drive to continue running, as normal, when this event occurs • Value 1 - Alarm configures the drive to continue running and set the appropriate alarm bit when this event occurs • Value 2 - FltCoastStop configures the drive to perform a coast stop and set the appropriate fault bit, in response this event. • Value 3 - Flt RampStop configures the drive to perform a ramp stop and set the appropriate fault bit, in response this event. • Value 4 - FltCurLimStp configures the drive to perform a current-limit stop and set the appropriate fault bit, in response this event.	Default Options:	1 = "Alarm" 0 = "Ignore" 1 = "Alarm" 2 = "FltCoastStop" 3 = "Flt RampStop" 4 = "FltCurLimStp"			
400	**Rated Amps** This displays the currenting rating of the inverter. The drive automatically sets this at power up. Note: The maximum value was changed for firmware version 2.03.	Units: Default: Min/Max:	Amps 22.0000 0.1000/2500.0000		RO	Real
401	**Rated Volts** This displays the name plate voltage rating of the inverter. The drive automatically sets this at power up.	Units: Default: Min/Max:	Volt 480 75/750		RO	16-bit Integer
402	**PWM Frequency** Sets the carrier frequency for the PWM output of the drive. Drive derating may occur at highercarrier frequencies. For derating information, refer to the PowerFlex Reference Manual. Default is dependant on power structure of the 'drive.	Units: Default: Min/Max:	kHz 2.0000 (Fr 5, 6, 9) 4.0000 (Fr 1-4) 1.0000/15.0000 (10.0000 Fr 5, 6, 9)		RW	Real
403	**Voltage Class** Sets the drive configuration for high or low voltage class (I.e. a 400 or 480V ac drive). Allows choice of configuration and affects many drive parameters including drive rated current, voltage, power, over loads and maximum PWM carrier frequency.	Default: Options:	3 = "High Voltage" 2 = "Low Voltage" 3 = "High Voltage"			
404	**Dead Time** The time delay between turning off and turning on an upper device and a lower device in the power structure. This parameter is set at power up and is not user adjustable.	Units: Default: Min/Max:	µSec 5.0000 2.0000/100.0000		RO	Real
405	**Dead Time Comp** The amount of voltage correction used to compensate for the loss of voltage during dead time. Do not adjust. Contact factory for alternative settings.	Units: Default: Min/ Max::	% 0 0/200		RW	16-bit Integer
406	**Power Loss Mode** Enter a value to configure the drive's response to a loss of input power, as sensed by an input voltage below the value specified in Par 408 [Power Loss Level]. Enter a value of 0 to make the drive coast (supply no current to the motor) during the power loss time (specified by Par 407 [Power Loss Time]. Enter a value of 2 to make the drive continue "normal" operation during the power loss time. Enter a value of 5 to make the drive provide only motor flux current during the power loss time.	Default: Options:	0 = "Coast" 0 = "Coast" 3 = "Reserved" 1 = "Reserved" 4 = "Reserved" 2 = "Continue" 5 = "Flux Only"			
407	**Power Loss Time** Sets the time that the drive will remain in power loss mode before a fault is detected.	Units: Default: Min/Max:	Sec 2.0000 0.0000/60.0000		RW	Real

No.	Name Description	Values		Linkable	Read-Write	Data Type
408	**Power Loss Level** Sets the bus voltage level at which ride-through begins and modulation ends. When bus voltage falls below this level, the drive prepares for an automatic restart. Enter a percentage of the bus voltage derived from the high voltage setting for the voltage class For example: on a 400-480V drive, $0.221 \times 480\text{Vac} \times \sqrt{2} = 150\text{Vdc}$	Units: Default: Min/Max: Scale:	% 22.1 15/95 0		RW	16-bit Integer
409	**Line Undervolts** Controls the level of bus voltage that is needed to complete precharge and sets the level for undervoltage alarm/fault detection. Enter a percentage of the bus voltage derived from the value in Par 401 [Rated Volts]. For example: on a 480V drive, $0.615 \times 480\text{Vac} \times \sqrt{2} = 418\text{Vdc}$	Units: Default: Min/Max:	% 61.5000 10.0000/90.0000		RW	Real
410	**PreChrg TimeOut** Sets the time duration of precharge. If bus voltage does not stabilize within this amount of time, a Precharge Error exception event occurs.	Units: Default: Min/Max:	Sec 30.0000 10.0000/180.0000		RW	Real
411	**PreChrg Control** Must equal 1 to allow drive to exit precharge and begin to run. Link this parameter to a controller output word to coordinate the precharge of multiple drives.	Default: Options:	1 = "Enbl PrChrg" 0 = "Hold PrChrg" 1 = "Enbl PrChrg"			
412	**Power EE TP Sel** Enter or write a value to select drive power EEPROM data displayed in Par 413 [Power EE TP Data]. The default is 0 "Zero". Note: Options 74 - 92 were changed and options 93 - 111 were added for firmware version 3.01. Options:					
413	**Power EE TP Data** Displays the data selected by Par 412 [Power EE TP Sel].	Default: Min/Max:	0 -/+2200000000		RO	Real

0 = Zero	19 = Bus VltScale	38 = IGBT Rated A	61 = Convt Type	80 = HH1 P/B ID	99 = HH2 P/B ID	
1 = Volt Class	20 = Sml PS Watts	39 = IGBT V Thres	62 = DC Bus Induc	81 = HH1 S/W ID	100 = HH2 S/W ID	
2 = Assy Rev	21 = Sml PS Min V	40 = IGBT Slope R	63 = AC Inp Induc	82 = HH1 P/B Rev	101 = HH2 P/B Rev	
3 = ASA S/N	22 = Lrg PS Watts	41 = IGBT Sw Engy	64 = Precharg Res	83 = HH1 S/W Rev	102 = HH2 S/W Rev	
4 = Manuf Year	23 = Lrg PS Min V	44 = IGBT CS Tres	65 = PrechThrm Tc	84 = HH1 Extr Data	103 = HH2 ExtrData	
5 = Manuf Month	24 = Inv Rated Kw	45 = IGBT CS Tc	66 = Mtr NP Units	85 = HH1 VoltIndx	104 = HH2 VoltIndx	
6 = Manuf Day	25 = Inv Rated V	46 = Diode V Thrs	67 = Mtr NP Power	86 = HH1 SizeIndx	105 = HH2 SizeIndx	
7 = Tst ProcStat	26 = Inv Rated A	47 = Diode SlopeR	68 = Mtr NP Volts	87 = HH1 Option	106 = HH2 Option	
8 = Life PwrCycl	27 = Inv 1min Amp	48 = Diode JC Tr	69 = Mtr NP Amps	88 = HH1 HrdPrdct	107 = HH2 HrdPrdct	
9 = Life Pwrup	28 = inv 3sec Amp	49 = Diode JC Tc	70 = Mtr NP Freq	89 = HH1 H/W Mdfy	108 = HH2 H/W Mdfy	
10 = Life RunTime	29 = SW OverC Amp	50 = GBT Tjmax	71 = Mtr NP RPM	90 = HH1 1V/Amp	109 = HH2 1V/Amp	
11 = Kw Accum	30 = DC Bus Cap	51 = HS Max DegC	72 = Mtr IR Vdrop	91 = HH1 2s/Amp	110 = HH2 2s/Amp	
12 = Mw Hrs Accum	31 = Min PWM Khz	52 = DB IGBT Amp	73 = Mtr Id Ref	92 = HH1 Scale	111 = HH2 Scale	
13 = Inv High Vlt	32 = Max PWM Khz	53 = DB ohms	74 = HH1 Data Rev	93 = HH2 Data Rev		
14 = Reserved	33 = Dfl PWM Khz	54 = DB E Jo/degC	75 = HH1 Dev Type	94 = HH2 Dev Type		
15 = Fan/Pwr Cntl	34 = PWM Dead us	55 = DB EB C/Watt	76 = HH1 Serial #	95 = HH2 Serial #		
16 = Temp Sensor	35 = Drive Frame	56 = DB B Jo/degC	77 = HH1 Test Date	96 = HH2 TestDate		
17 = Phs AmpScale	36 = IGBTs per Pk	57 = DB BA C/Watt	78 = HH1 Vcn Code	97 = HH2 Vcn Code		
18 = Gnd AmpScale	37 = GBT Rated V	60 = DB Ambt Tmax	79 = HH1 CrsCncID	98 = HH2 CrsCncID		

No.	Name Description	Values			Linkable	Read-Write	Data Type
414	**Brake/Bus Cnfg** Configures the brake and bus operation of the drive. • Set bit 0 [Brake Enable] to enable the operation of the internal brake transistor. • Set bit 1 [Brake Extern] to configure the brake to use an external resistor. • Set bit 2 [Bus Ref High] to select the "high" voltage setting as the turn-on point for the Bus Voltage Regulator. With the "high" setting brake operation starts when bus voltage reaches the value of Par 415 [BusReg/Brake Ref], and Bus Voltage Regulator operation starts when bus voltage reaches the value of Par 415 [BusReg/Brake Ref] plus 4.5%. With the "low" setting, the bus regulator turns on first at the value set by Par 415 [BusReg/Brake Ref] and then the dynamic braking turns on when there are any transients above the value set in Par 415 [BusReg/Brake Ref]. • Set bit 3 [Bus Reg En] to enable the Bus Voltage Regulator. The output of the Bus Voltage Regulator is summed with Par 128 [Regen Power Lim] and fed into the Power Limit Calculator. It, in effect, reduces regenerative torque references when the bus voltage is too high. Notes: This parameter was changed to non-linkable and bits 5 and 6 were added for future use - not active for use with firmware version 3.01.						

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	DC Braking	Fast Braking	Reserved	Bus Reg En	Bus Ref High	Brake Extern	Brake Enable
Default	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

415	**BusReg/Brake Ref** Sets the "turn-on" voltage for the bus regulator and brakes. Enter a percentage of the high voltage setting for the voltage class (e.g., on a 400-480V drive, $111 \times \sqrt{2} \times 480 = \text{VDC}$	Units: Default: Min/Max:	% 111.0000 110.5000/117.8000		RW	Real
416	**Brake PulseWatts** Limits the power delivered to the external Dynamic Brake (DB) resistor for one second, without exceeding the rated element temperature. You may change the value of this parameter only if you have selected and external DB resistor (set bit 1 [Brake Extern] of Par 414 [Brake/Bus Cnfg]. If this rating is not available from the resistor vendor, you can approximate it with this equation: Par 416 [Brake PulseWatts] = 75,000 x Weight, where Weight equals the weight of resistor wire element in pounds (not the entire weight of the resistor). Another equation you can use is: Par 416 [Brake PulseWatts] = Time Constant x Brake Watts; where Time Constant equals the amount of time to reach 63% of its rated temperature while the maximum power is applied, and Brake Watts is the peak power rating of the resistor. Note: The maximum value was changed from 1000000.0000 to 1000000000.0000 for firmware version 3.01.	Units: Default: Min/Max:	Watt 2000.0000 1.0000/1000000000.0000		RW	Real
417	**Brake Watts** Sets the continuous rated power reference for the Dynamic Brake (DB). You may change the value of this parameter only if you have selected and external DB resistor (set bit 1 [Brake Extern] of Par 414 [Brake/Bus Cnfg]. Note: The maximum value was changed from 5000.0000 to 500000.0000 for firmware version 3.01.	Units: Default: Min/Max:	Watt 100.0000 0.0000/500000.0000		RW	Real
418	**Brake TP Sel** Enter or write a value to select the drive brake data displayed in Par 419 [Brake TP Data].	Default: Options:	0 = "Zero" 0 = "Zero" 1 = "Duty Cycle" 2 = "Power Actual" 3 = "Max BodyTemp" 4 = "Max ElemTemp" 5 = "BodyTemp Act" 6 = "ElemTemp Act" 7 = "BTmpTripStat" 8 = "ETmpTripStat" 9 = "Int DB Ohms" 10 = "Data State" 11 = "MC BrakeEnbl" 12 = "1/rdb" 13 = "1/th_eb" 14 = "1/ce" 15 = "tamax" 16 = "1/th_ba" 17 = "1/cb" 18 = "DB IGBT Amp"			
419	**Brake TP Data** Displays the data selected by Par 418 [Brake TP Sel].	Default: Min/Max:	0.0000 -/+2200000000.0000		RO	Real
420	**Pwr Strct Mode** Displays the power structure used in the drive. This is an identifier to the firmware for power structure control. Bit 0 = PowerFlex 700S Frame 1 to 6(Lo Pwr Strct) Bit 1 = PowerFlex 700S above Frame 6(Hi Pwr Strct) Bit 3 = PowerFlex 700S Frame 12 Note: Bit 3 [Parallel Drv] was added for firmware version 3.01.						

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Parallel Drv	PF 700L	Hi Pwr Strct	Lo PwrStrct
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values		Linkable	Read-Write	Data Type
421	**Iqs Integ Freq** Sets the break frequency of the torque producing (q-axis) current regulator. This and Par 422 [Iqs Reg P Gain] determine the integral gain for the q-axis current regulator. Set by the autotune procedure. Do not change this value.	Units: Default: Min/Max:	R/S 10 0/32767		RW	16-bit Integer
422	**Iqs Reg P Gain** Sets the proportional gain of the torque producing (q-axis) current regulator. Set by the autotune procedure. Do not change this value.	Default: Min/Max: Scale:	1.0 0.0/100.0 x 10		RW	16-bit Integer
423	**Iqs Rate Limit** Sets the limit of the rate of change for the torque producing (q-axis) current regulator. Do not change this parameter. Use Par 355 [Iq Rate Limited] to control the q-axis current rate limit.	Units: Default: Min/Max: Scale:	%/mS 800.0 0.0/800.0 x 10		RW	16-bit Integer
424	**Flux Ratio Ref** Active only in the Field Oriented Control (FOC) 2 motor control mode (when Par 485 [Motor Ctrl Mode] equals 2 - FVC 2). Provides scaling factor for the flux producing (d-axis) current reference. • When active (Par 511 [FVC2 Mode Config], bit 28 [FlxRatRef Use] is set), Flux Producing (d-axis) Current Reference = Par 488 [Flux Current] x Par 424 [Flux Ratio Ref] • When inactive (Par 511 [FVC2 Mode Config], bit 28 [FlxRatRef Use] is cleared) Flux Producing (d-axis) Current Reference = Par 488 [Flux Current] below base speed and Flux Producing (d-axis) Current Reference = Par 488 [Flux Current] x motor base speed/motor speed above base speed.	Units: Default: Min/Max: Scale:	% 99.99 12.50/399.99 100 = 32767		RW	16-bit Integer
425	**Flux Rate Limit** Sets the limit for the maximum rate of change for flux producing (d-axis) current.	Units: Default: Min/Max: Scale:	%/mS 1.0 0.0/195.3 x 10		RW	16-bit Integer
426	**Flux Satur Coef** This represents the amount of flux current required to compensate for the flux saturation effect of the motor. Active only for FOC 2 motor control mode.	Units: Default: Min/Max: Scale:	%/ 0.0 0.0/51.3 x 10		RW	16-bit Integer
427	**PM Mtr CEMF Comp** Provides CEMF compensation for the torque producing (q-axis) current in the permanent magnet motor mode.	Units: Default: Min/Max:	% 0 0/100		RW	16-bit Integer
428	**IReg IGain Fctr** Adjustment for current regulator integral frequency factor (gain).	Default: Min/Max:	1 1/20		RW	16-bit Integer
429	**Ids Integ Freq** Sets the break frequency of the flux producing (d-axis) current regulator. This and Par 430 [Ids Reg P Gain] determine the integral gain for the d-axis current regulator. Set by the autotune procedure. Do not change this value.	Units: Default: Min/Max:	R/S 10 0/32767		RW	16-bit Integer
430	**Ids Reg P Gain** Sets the proportional gain of the flux producing (d-axis) current regulator. Set by the autotune procedure. Do not change this value.	Default: Min/Max: Scale:	1.0 0.0/100.0 x 10		RW	16-bit Integer
431	**Test Current Ref** Sets the current reference used for Motor Control (MC) Test Mode.	Units: Default: Min/Max: Scale:	% 50.0 0.0/799.9 x 10		RW	16-bit Integer
432	**Test Freq Ref** Sets the frequency reference used for Motor Control (MC) Test Mode. Note: The default value was changed for firmware version 2.03.	Units: Default: Min/Max: Scale:	% 1.0 -/+799.9 x 10		RW	16-bit Integer
433	**Test Freq Rate** Sets the rate of change of frequency reference used for Motor Control (MC) Test Mode.	Units: Default: Min/Max: Scale:	% /S 5.0 0.0/1000.0 x 10		RW	16-bit Integer
434	**Mtr Vds Base** Displays the motor flux producing (d-axis) voltage command when running at nameplate motor speed and load. This value is determined during the auto-tune procedure. Do not change this value. Used only in FOC modes.	Default: Min/Max	0 -8192/0		RO	16-bit Integer
435	**Mtr Vqs Base** Displays the motor torque producing (q-axis) voltage command when running at nameplate motor speed and load. This value is determined during the auto-tune procedure. Do not change this value. Used only in FOC modes.	Default: Min/Max:	0 0/8192		RO	16-bit Integer
437	**Vqs Max** Displays the maximum torque producing (q-axis) voltage allowed on the motor. Adaptation is disabled below this voltage. This value is determined during the auto-tune procedure. Do not change this value. Used only in FOC modes.	Default: Min/Max:	7971 0/32767		RW	16-bit Integer

No.	Name Description	Values		Linkable	Read-Write	Data Type
438	**Vds Max** Displays the maximum flux producing (d-axis) voltage allowed on the motor. Adaptation is disabled below this voltage. This value is determined during the auto-tune procedure. Do not change this value. Used only in FOC modes.	Default: Min/Max:	5793 0/32767		RW	16-bit Integer
439	**Vqs Min** Displays the minimum torque producing (q-axis) voltage required for motor control adaptation. This value is determined during the auto-tune procedure. Do not change this value. Used only in FOC modes.	Default: Min/Max:	246 -/+32767		RW	16-bit Integer
440	**Vds Min** Displays the minimum flux producing (d-axis) voltage required for motor control adaptation. Adaptation is disabled below this voltage. This value is determined during the auto-tune procedure. Do not change this value.	Default: Min/Max:	246 -/+32767		RW	16-bit Integer
441	**Vds Fdbk Filt** Displays measured filtered motor flux producing (d-axis) voltage.	Default: Min/Max:	0 -/+32767		RO	16-bit Integer
442	**Vqs Fdbk Filt** Displays measured filtered motor torque producing (q-axis) voltage.	Default: Min/Max:	0 -/+32767		RO	16-bit Integer
443	**Flux Reg P Gain1** Sets the Proportional (P) gain for the flux regulator. Do not change this value.	Default: Min/Max:	150 0/32767		RW	16-bit Integer
444	**Flux Reg I Gain** Sets the Integral (I) gain for the flux regulator. Do not change this value.	Default: Min/Max:	350 0/32767		RW	16-bit Integer
445	**Slip Gain Max** Displays the maximum slip frequency allowed in the motor control. The scaling is in hertz x 256. This value is determined during the auto-tune procedure. Do not change this value.	Units: Default: Min/Max:	% 300 100/10000		RW	16-bit Integer
446	**Slip Gain Min** Displays the minimum slip frequency allowed in the motor control. The scaling is in hertz x 256. This value is determined during the auto-tune procedure. Do not change this value.	Units: Default: Min/Max:	% 50 0/100		RW	16-bit Integer
447	**Slip Reg P Gain** Sets the Proportional (P) gain for the slip regulator. Do not change this value.	Default: Min/Max:	35 0/32767		RW	16-bit Integer
448	**Slip Reg I Gain** Sets the Integral (I) gain for the slip regulator. Do not change this value.	Default: Min/Max:	100 0/32767		RW	16-bit Integer
449	**SrLss FreqReg Ki** Sets the integral gain of the Frequency Regulator, which estimates motor speed when sensorless feedback is selected. Do not change this value.	Default: Min/Max:	250 0/32767		RW	16-bit Integer
450	**SrLss FreqReg Kp** Sets the proportional gain of the Frequency Regulator, which estimates motor speed when sensorless feedback is selected. Do not change this value.	Default: Min/Max:	350 0/32767		RW	16-bit Integer
453	**Iu Offset** Sets the current offset correction for the phase U current. This value is set automatically when the drive is not running and Motor Control (MC) is not faulted. Do not change this value.	Default: Min/Max:	0 -/+32767		RW	16-bit Integer
454	**Iw Offset** Sets the current offset correction for the flux producing (d-axis) current regulator. This value is set automatically when the drive is not running and Motor Control (MC) is not faulted. Do not change this value.	Default: Min/Max:	0 -/+32767		RW	16-bit Integer
456	**MC Build Number** Displays the build number of the drive's Motor Control (MC) software.	Default: Min/Max:	0 0/65535		RO	16-bit Integer
457	**MC Firmware Rev** Displays the major and minor revision levels of the drive's Motor Control (MC) software.	Default: Min/Max: Scale:	0.00 0.00/655.35 x 10		RO	16-bit Integer

463 **MC Diag Error 1**

Displays the first diagnostic error encountered by the Motor Control (MC). Errors appear in this parameter in the order in which they occurred.
Note: Bits 7 & 8 have been changed to [Ground Fault] for firmware version 2.04.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Neg Parametr	Not Rotating	Not Rotating	Reserved	Reserved	WP-VNOn-Wcur	WP-UNOn-U,W	VP-WNOn-Wcur	VP-UNOn-Ucur	UP-WNOn-U,W	UP-VNOn-Ucur	Ground Fault	Ground Fault	UP,VPdevShrt	UP,WPdevShrt	VP,WPdevShrt	UN,VNdevShrt	UN,WNdevShrt	VN,WNdevShrt	Vbus Range
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

0 = False
1 = True

No.	Name Description	Values	Linkable	Read-Write	Data Type
464	**MC Diag Error 2** Displays the second diagnostic error encountered by the Motor Control (MC). Errors appear in this parameter in the order in which they occurred.				

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Negative Wr	Reserved	Reserved	WP-VNOn-Vvw	WPUN-Vuv,Vvw	VP-WNOn-Vvw	VP-UNOn-Vuv	UPWN-Vuv,Vvw	UP-VNOn-Vuv	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	SensOfstRnge
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

465	**MC Diag Error 3** Displays the third diagnostic error encountered by the Motor Control (MC). Errors appear in this parameter in the order in which they occurred. Bit 9 [CurrSensor U] - indicates a current sensing fault in the U phase power structure of a frame 12 drive. Bit 11 [CurrSensor V] - indicates a current sensing fault in the V phase power structure of a frame 12 drive. Bit 13 [CurrSensor W] - indicates a current sensing fault in the W phase power structure of a frame 12 drive. Bit 17 [IFlux Range] - indicates that the Flux current is above 90% of the motor rated current. Note: Bits 1 - 7, 10, 12 and 18 were changed to [Reserved], bits 9, 11, 13 and 17 were changed for firmware version 3.01.								

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	IFlux Range	Reserved	Reserved	Reserved	CurrSensor W	Reserved	CurrSensor V	Reserved	CurrSensor U	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values			Linkable	Read-Write	Data Type
466	**MC TP1 Select** Enter a value to select Motor Control (MC) data displayed in Par 467 [MC TP1 Value] and Par 468 [MC TP1 Bit]. Par 467 [MC TP1 Value] and Par 468 [MC TP1 Bit] are diagnostic tools you can use to view internal drive parameters. The default value is option 0 "MuIqsRef2". Note: Options 209 - 212 were added for firmware version 2.04. Options 213 - 254 were added for firmware version 3.01. Options:						
	0 = MuIqsRef2 1 = SlipRatio 2 = Ws 3 = WrEst2 4 = We 5 = VdsCmd 6 = VqsCmd 7 = VuCmd1 8 = VvCmd1 9 = VwCmd1 10 = IuFdbk 11 = IwFdbk 12 = IdsFdbk 13 = IqsFdbk 14 = VdsFdbk 15 = VuvFdbk 16 = VvwFdbk 17 = VqsFdbk 18 = IdsCmd 19 = IqsRatio 20 = MuIqsRef 21 = IqsCmd 22 = We2 23 = VuTd 24 = VvTd 25 = VwTd 26 = VuCmd2 27 = VvCmd2 28 = VwCmd2 29 = Kpwm 30 = Vds_cemf 31 = Vqs_cemf 32 = VdsCmd2 33 = VqsCmd2 34 = IdsIntegral 35 = IqsIntegral 36 = DcBus 37 = AGnd 38 = Wr2 39 = FluxRatio1 40 = VbusFdbk 41 = FluxRatio2 42 = FluxRatio3	43 = FluxRatio4 44 = MuFlxRtioRef 45 = RcpFlxRatio1 46 = MuIfluxRef 47 = MuItestRef 48 = MotVntc 49 = BaseSlip 50 = VbusFdbk2 51 = VdsFdbk2 52 = VqsFdbk2 53 = VdsSpdVltFlt 54 = WrEst1 55 = MuTestFrqRef 56 = TestFrqRef 57 = FluxFltrN_1 58 = PrchgDlayCtr 59 = PrchTimOutCr 60 = PrchPilotCtr 61 = TrqEnableCtr 62 = MuTscan1 63 = ErStatFromCp 64 = FlxCurRteOut 65 = ThetaE 66 = SinThetaE1 67 = SinThetaE2 68 = SinThetaE3 69 = SinThetaE4 70 = SinThetaE5 71 = SinThetaE6 72 = ThetaEcor 73 = SinThtaEcor1 74 = SinThtaEcor2 75 = SinThtaEcor3 76 = SinThtaEcor4 77 = MuIRef2B 78 = SpdFdbk 79 = SpdIntegral 80 = SpdPrportnal 81 = SpdPI 82 = SpdRef 83 = SlipGainEst 84 = SlipGainFf 85 = Ws2	86 = SlipGain 87 = SlipGainFltr 88 = SlipVdsCmd 89 = SlpVdsCmdFlt 90 = VdsLastError 91 = VdsPrportnal 92 = VdsIntMnitor 93 = MotorVlts 94 = BusUtil 95 = FieldInitTm 96 = IqsLimit 97 = VqsCmdMotor 98 = We2FieldWeak 99 = Vqs2FieldWeak 100 = VqsIdsCmd 101 = VqsMaxMotor 102 = VqsMaxVbus 103 = CalcPUMtrFlx 104 = FldWkInitTim 105 = FluxIdsFfFlt 106 = FlxVqsCmdFlt 107 = VqsError 108 = VqsFluxPI 109 = VqsIntegral 110 = VqsPrportl1 111 = VqsPrportnl2 112 = TestMark70 113 = TestMark71 114 = TestMark72 115 = TestMark73 116 = TestMark74 117 = TestMark75 118 = TestMark76 119 = TestMark76 120 = TestMark78 121 = TestMark79 122 = TestMark7A 123 = TestMark7B 124 = TestMark7C 125 = TestMark7D 126 = TestMark7E 127 = TestMark7F 128 = RWVuOut	129 = RWVvOut 130 = RWVwOut 131 = RWuErr 132 = RWvErr 133 = RWwErr 134 = RWVuOut2 135 = RWVvOut2 136 = RWVwOut2 137 = RWPosState 138 = RWNegState 139 = BusDropVolts 140 = RecoverVolts 141 = DbDuty 142 = VdsFdbkFltr 143 = VqsFdbkFltr 144 = VbusFdbkFltr 145 = VbusMemory 146 = VpEnc0VelFbk 147 = VpEnc1VelFbk 148 = VPOpt0VelFbk 149 = VPOpt1VelFbk 150 = BitSelect1 151 = BitSelect2 152 = SrLssWeEst2 153 = MuIqsRef2 154 = EstThetaByMV 155 = ETVdsFbkA 156 = ETVqsFbkA 157 = ETVdsFbkS 158 = ETVqsFbkS 159 = ETAtanVqVd 160 = ETByMtrVDfr 161 = VelRef2 162 = VelOutput 163 = Torque Est 164 = Trq Est Filt 165 = PowerCalc 166 = ThetaELiner 167 = PprCntDfcOt 168 = PprCntDfcTh 169 = LinearPprCnt 170 = ActiveFdbk 171 = VdsComp	172 = VqsComp 173 = S4096 2.5V 174 = IqsLimFlux 175 = IqsLimSlip 176 = StatorCLimVp 177 = Torque Err 178 = Torque Prop 179 = Torque Int 180 = IqsCmd2 181 = Torque Cmd 182 = Torque PI 183 = RotorFluxEst 184 = VLmtVqsRef 185 = VRefVqsRefNm 186 = VRefRsIqsNm 187 = VRefVqsSpdVN 188 = EconoVoltGn 189 = F Output Fre 190 = TrqCreflqsCm 191 = Snk Wr 192 = SrLssWrAve 193 = CurFbkIqsFbk 194 = ACRIqsErr 195 = CrefsqIdsCmd 196 = CurFbkIdsFbk 197 = VqsCmd700B 198 = VdsCmc700B 199 = VqsRefNom 200 = VqsRsIqsNom 201 = VqsSpdVltNom 202 = VltLmtVqsRef 203 = IdsFbkDeriv 204 = VdsRefNom 205 = VdsRsIdsNom 206 = VdsSpdVltNom 207 = VltLmtVdsRef 208 = IdsFbkDeriv 209 = VuvFbkOffset 210 = VvwFbkOffset 211 = IuFbkOffset 212 = IwFbkOffset 213 = KSlipNP 214 = IUnbalanceSt	215 = CurrSnsChck1 216 = CurrSnsChck3 217 = CurrSnsChck5 218 = FrameSize 219 = Reserved 220 = Reserved 221 = Reserved 222 = RecBrkTimer 223 = ReconVmax1 224 = ReconFreq 225 = ReconNgleAcc 226 = VsCmdAngleVf 227 = RecFreqInit 228 = SpeedRef 229 = CurFbkIdsFbk 230 = CurFbkIqsFbk 231 = VqsThetaEst 232 = VdsThetaEst 233 = DebugFlag1 234 = DebugFlag3 235 = RecnSwitch 236 = SrLssSlip 237 = SrLssSlipFlt 238 = BusLimitVBEr 239 = ParDecelRtMC 240 = ACRIqsRef 241 = ACRIqsCmd 242 = IqsCmdFltr 243 = ISpdCmd 244 = AccDecRate 245 = RecThetaEx4 246 = RecVqsFdbk 247 = RecVdsFdbk 248 = VdeFilter 249 = VqsFdbkTrans 250 = VdsFdbkTrans 251 = Excitation 252 = ExciteStatus 253 = ExcitDir 254 = ThetaEsample 255 Reserved			
467	**MC TP1 Value** Displays the data selected by Par 466 [MC TP1 Select]. This display should only be used if the selected value is integer data. This parameter is a diagnostic tool you can use to view internal drive parameters.	Default: Min/Max:	0 -/+2147483648			RO	32-bit Integer

No.	Name Description	Values		Linkable	Read-Write	Data Type
468	**MC TP1 Bit** Displays the data selected by Par 466 [MC TP1 Select]. This display should only be used if the selected value is bit-enumerated data. Par 468 [MC TP1 Bit] is a diagnostic tool you can use to view internal drive parameters.	Default: Min: Max:	00000000000000000000000000000000 00000000000000000000000000000000 11111111111111111111111111111111		RO	32-bit Boolean
469	**FVC CEMF Comp** Displays the current regulator feedforward compensation. Do not change this value.	Units: Default: Min/Max:	% 0 0/100		RW	16-bit Integer
470	**Flux Reg P Gain2** Displays the additional proportional gain used at the start of Bus voltage limited field weakening. Do not change this value.	Default: Min/Max:	1000 0/32767		RW	16-bit Integer
471	**Estimated Torque** Displays the calculated motor shaft torque. Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	0.0 +/-8.0		RO	Real
472	**PreCharge Delay** Adjusts the delay between the time all other precharge conditions have been met and the time the drive leaves the precharge state. Can be used to control the sequence of precharge completion in a drive system. The maximum value of this parameter is calculated as follows: Par 472 [PreCharge Delay] = Par 410 [PreChrg TimeOut] - 1.0 second.	Units: Default: Min/Max:	Sec 2.0 0.0/Calculated		RW	16-bit Integer

No.	Name Description	Values			Linkable	Read-Write	Data Type
473	**MC TP2 Select** Enter a value to select Motor Control (MC) data displayed in Par 474 [MC TP2 Value] and Par 468 [MC TP1 Bit]. Par 474 [MC TP2 Value], and Par 468 [MC TP1 Bit] are diagnostic tools you can use to view internal drive parameters. This parameter should not be changed by the user. The default value is option 0 "MulqsRef2". Note: This parameter was added for firmware version 2.03. Options: 0 = MulqsRef2 1 = SlipRatio 2 = Ws 3 = WrEst2 4 = We 5 = VdsCmd 6 = VqsCmd 7 = VuCmd1 8 = VvCmd1 9 = VwCmd1 10 = IuFdbk 11 = IwFdbk 12 = IdsFdbk 13 = IqsFdbk 14 = VdsFdbk 15 = VuvFdbk 16 = VvwFdbk 17 = VqsFdbk 18 = IdsCmd 19 = IqsRatio 20 = MulqsRef 21 = IqsCmd 22 = We2 23 = VuTd 24 = VvTd 25 = VwTd 26 = VuCmd2 27 = VvCmd2 28 = VwCmd2 29 = Kpwm 30 = Vds_cemf 31 = Vqs_cemf 32 = VdsCmd2 33 = VqsCmd2 34 = IdsIntegral 35 = IqsIntegral 36 = DcBus 37 = AGnd 38 = Wr2 39 = FluxRatio1 40 = VbusFdbk 41 = FluxRatio2 42 = FluxRatio3 43 = FluxRatio4 44 = MuFlxRtioRef 45 = RcpFlxRatio1 46 = MulfluxRef 47 = MuItestRef 48 = MotVntc 49 = BaseSlip 50 = VbusFdbk2 51 = VdsFdbk2 52 = VqsFdbk2 53 = VdsSpdVltFlt 54 = WrEst1 55 = MuTestFrqRef 56 = TestFrqRef 57 = FluxFltrN_1 58 = PrchgDlayCtr 59 = PrchTimOutCr 60 = PrchPilotCtr 61 = TrqEnableCtr 62 = MuTscan1 63 = ErStatFromCp 64 = FlxCurRteOut 65 = ThetaE 66 = SinThetaE1 67 = SinThetaE2 68 = SinThetaE3 69 = SinThetaE4 70 = SinThetaE5 71 = SinThetaE6 72 = ThetaEcor 73 = SinThtaEcor1 74 = SinThtaEcor2 75 = SinThtaEcor3 76 = SinThtaEcor4 77 = MulRef2B 78 = SpdFdbk 79 = SpdIntegral 80 = SpdPrportnal 81 = SpdPI 82 = SpdRef 83 = SlipGainEst 84 = SlipGainFf 85 = Ws2 86 = SlipGain 87 = SlipGainFltr 88 = SlipVdsCmd 89 = SlpVdsCmdFlt 90 = VdsLastError 91 = VdsPrportnal 92 = VdsIntMnitor 93 = MotorVlts 94 = BusUtil 95 = FieldInitTm 96 = IqsLimit 97 = VqsCmdMotor 98 = We2FieldWeak 99 = VqsFieldWkBase 100 = VqsIdsCmd 101 = VqsMaxMotor 102 = VqsMaxVbus 103 = CalcPUMtrFlx 104 = FldWkInitTim 105 = FluxIdsFfFlt 106 = FlxVqsCmdFlt 107 = VqsError 108 = VqsFluxPI 109 = VqsIntegral 110 = VqsPrportI1 111 = VqsPrportnl2 112 = TestMark70 113 = TestMark71 114 = TestMark72 115 = TestMark73 116 = TestMark74 117 = TestMark75 118 = TestMark76 119 = TestMark77 120 = TestMark78 121 = TestMark79 122 = TestMark7A 123 = TestMark7B 124 = TestMark7C 125 = TestMark7D 126 = TestMark7E 127 = TestMark7F 128 = RWVuOut 129 = RWVvOut 130 = RWVwOut 131 = RWuErr 132 = RWvErr 133 = RWwErr 134 = RWVuOut2 135 = RWVvOut2 136 = RWVwOut2 137 = RWPosState 138 = RWNegState 139 = BusDropVolts 140 = RecoverVolts 141 = DbDuty 142 = VdsFdbkFltr 143 = VqsFdbkFltr 144 = VbusFdbkFltr 145 = VbusMemory 146 = VpEnc0VelFbk 147 = VpEnc1VelFbk 148 = VPOpt0VelFbk 149 = VPOpt1VelFbk 150 = BitSelect1 151 = BitSelect2 152 = SrLssWeEst2 153 = MulqsRef2 154 = EstThetaByMV 155 = ETVdsFbkA 156 = ETVqsFbkA 157 = ETVdsFbkS 158 = ETVqsFbkS 159 = ETAtanVqVd 160 = ETByMtrVDfr 161 = VelRef2 162 = VelOutput 163 = Torque Est 164 = TrqEst Filt 165 = PowerCalc 166 = ThetaELiner 167 = PprCntDfcOt 168 = PprCntDfcTh 169 = LinearPprCnt 170 = ActiveFdbk 171 = VdsComp 172 = VqsComp 173 = S4096 2.5V 174 = IqsLimFlux 175 = IqsLimSlip 176 = StatorCLimVp 177 = Torque Err 178 = Torque Prop 179 = Torque Int 180 = IqsCmd2 181 = Torque Cmd 182 = Torque PI 183 = RotorFluxEst 184 = VLmtVqsRef 185 = VRefVqsRefNm 186 = VRefRsIqsNm 187 = VRefVqsSpdVN 188 = EconoVoltGn 189 = F Output Fre 190 = TrqCreflqsCm 191 = Snk Wr 192 = SrLssWrAve 193 = CurFbkIqsFbk 194 = ACRIqsErr 195 = CrefwqIdsCmd 196 = CurFbkIdsFbk 197 = VqsCmd700B 198 = VdsCmc700B 199 = VqsRefNom 200 = VqsRsIqsNom 201 = VqsSpdVltNom 202 = VltLmtVqsRef 203 = IdsFbkDeriv 204 = VdsRefNom 205 = VdsRsIdsNom 206 = VdsSpdVltNom 207 = VltLmtVdsRef 208 = IdsFbkDeriv 209 = VuvFbkOffset 210 = VvwFbkOffset 211 = IuFdbkOffest 212 = IwFdbkOffset 213 - 255 = Reserved					
474	**MC TP2 Value** Displays the data selected by Par 473 [MC TP2 Select]. This display should only be used if the selected value is integer data. This parameter is a diagnostic tool you can use to view internal drive parameters. This parameter should not be changed by the user. Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	0.0 +/- 2147483648			RO	32-bit Integer

No.	Name Description	Values		Linkable	Read-Write	Data Type
475	**MC FaultTPSelect** Enter or write a value to select the Motor Control (MC) Fault Data displayed in Par 476 [MC FaultTP Value]. This parameter should not be changed by the user. Notes: This parameter was added for firmware version 2.03. The value for option 67 was changed from “HH GateShort” to “MCStatus1” for firmware version 2.04. Values 68 - 76 were added for firmware version 3.01. Options: 0 = IqsRef2, 1 = Ws, 2 = We, 3 = We2, 4 = VdsCmd, 5 = VqsCmd, 6 = VdsFdbk, 7 = VqsFdbk, 8 = IuFdbk, 9 = IwFdbk, 10 = IdsFdbk, 11 = IqsFdbk, 12 = IdsCmd, 13 = IqsCmd, 14 = DcBus, 15 = VbusFdbk, 16 = VbusFdbkFltr, 17 = VbusMemory, 18 = Kpwm, 19 = ThetaE, 20 = FldWeakActiv, 21 = MtrFlxPU, 23 = SlipGainFltr, 24 = SlipVdsCmd, 25 = MotorVolts, 26 = BusUtil, 27 = IqsLimit, 28 = VqsIdsCmd, 29 = DbDuty, 30 = VelFdbkEnc0, 31 = VelFdbkEnc1, 32 = VdsCmd2, 33 = VelFdbkOpt1, 34 = Reserved, 35 = Reserved, 36 = Reserved, 37 = Reserved, 38 = TorqueEst, 39 = TorqueEstFlt, 40 = Reserved, 41 = PowerCalc, 42 = TorqueCmd, 43 = RotorFluxEst, 44 = Ws2, 45 = BusDropVolts, 46 = RecoverVolts, 47 = TestDtoA0, 48 = TestDtoA1, 49 = TestDtoA2, 50 = TestDtoA3, 51 = RideThruActv, 52 = PreChrgReqVp, 53 = Reserved, 54 = Reserved, 55 = Reserved, 56 = TorqTrimActv, 57 = VbusDrop, 58 = VdsMax, 59 = VbusLow, 60 = VbusRising, 61 = PreChrgDone, 62 = FieldWeak, 63 = Reserved, 64 = DynamBrakeOn, 65 = Reserved, 66 = MCStatusMon, 67 = MCStatus1, 68 = HH OverCurr, 69 = HH BusOvrVlt, 70 = HH Tr Desat, 71 = HH OverLoad, 72 = HH Precharge, 73 = HH Fan Alarm, 74 = HH BusComm, 75 = HH HW Incomp, 76 = HH GateShort				
476	**MC FaultTP Value** Displays the data selected by Par 475 [MC FaultTPSelect]. This parameter should not be changed by the user. Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	0.0 +/- 2147483648		RO	32-bit Integer
477	**Est Theta Delay** Active only in Permanent Magnet motor mode (when Par 485 [Motor Ctrl Mode] equals 2 - “PMag Motor”). Provides a delay for the function that compares the estimated rotor position and the data from the position sensor.	Units: Default: Min/Max:	mSec 10 2/1024		RW	16-bit Integer
478	**VPL Mem Password** Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	0 +/-2147483648		RW	32-bit Integer
479	**VPL Mem Address** Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	0 0 - 4294967295		RW	32-bit Integer
480	**VPL Mem Data Int** Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	32 +/-2147483648		RW	32-bit Integer
481	**VPL Mem Data Flt** Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	1.25		RW	Real
482	**VPL Mem Data Bit** Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	1.25		RW	32-bit Integer
483	**VPL Mem Link Int** Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	 +/-2147483648		RO	32-bit Integer
484	**VPL Mem Link Flt** Note: This parameter was added for firmware version 2.03.				RO	Real
485	**Motor Ctrl Mode** Enter a value to select the operating mode for the Motor Control (MC). • Value 0 - Field Oriented Control (FOC) is induction motor control with voltage adaptation. • Value 1 - Field Oriented Control 2 (FOC 2) is induction motor control with temperature adaptation. • Value 2 - Permanent Magnet Motor Control (Pmag Motor) is permanent magnet motor operation. • Value 3 - V/Hz is volts per hertz motor control. • Value 4 - Test is the test mode.	Default: Options:	0 = “FOC” 0 = “FOC” 1 = “FOC 2” 2 = “PMag Motor” 3 = “V/Hz” 4 = “Test”			
486	**Rated Slip Freq** Displays the control slip frequency, determined from Par 3 [Motor NP Hertz] and Par 4 [Motor NP RPM]. Measured and updated by the autotune procedure. Do not change this value. Note: Changed the attributes to allow changing this parameter while the drive is running for firmware version 3.01.	Units: Default: Min/Max: Scale:	Hz 0.470 0.000/32.000 x 1000		RW	16-bit Integer

No.	Name Description	Values		Linkable	Read-Write	Data Type
487	**Motor NTC Coef** Defines a coefficient used to calculate the rotor temperature from the measured stator temperature. Used only in Field Oriented Control - 2 (FOC2) mode. See Par Par 485 [Motor Ctrl Mode].	Units: Default: Min/Max:	% 100 50/200		RW	16-bit Integer
488	**Flux Current** Specifies the magnetizing current that produces rated flux in the motor in a per unit (percent representation). Measured by the auto-tune procedure. Do not change this value.	Units: Default: Min/Max: Scale:	% 30.00 0.00/75.00 x 100		RW	16-bit Integer
489	**Flx CurFdbk (Id)** Displays flux producing (d-axis) current feedback.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000 pu		RO	Real
490	**StatorInductance** Displays the sum of the stator and cable inductances of the motor in per unit (percent representation), as determined by the auto-tune procedure. Scaled to percent of rated motor impedance. Do not change this value. Note: the default value was changed from 8192 to 4096 for firmware version 3.01.	Units: Default: Min/Max: Scale:	% 100.0 0.00/799.99 100 = 4096		RW	16-bit Integer
491	**StatorResistance** Displays the sum of the stator and cable resistances of the motor in per unit (percent representation), as determined by the auto-tune procedure. Scaled to percent of rated motor impedance. Do not change this value.	Units: Default: Min/Max: Scale:	% 1.00 0.00/100.00 100 = 8192		RW	16-bit Integer
492	**Leak Inductance** Displays the sum of the motor stator and rotor leak inductance, and motor cable inductances in per unit (percent representation), as determined by the auto-tune procedure. Scaled to percent of rated motor impedance. Do not change this value.	Units: Default: Min/Max: Scale:	% 20.00 0.00/100.00 100 = 8192		RW	16-bit Integer
493	**Leak Indc Satur1** Displays the leakage inductance correction for the first overload level as determined by the autotune procedure.	Units: Default: Min/Max:	% 100.00 25.00/100.00		RW	16-bit Integer
494	**Leak Indc Satur2** Displays the leakage inductance correction for the first overload level as determined by the auto-tune procedure.	Units: Default: Min/Max:	% 100.00 25.00/100.00		RW	16-bit Integer
495	**Iqs Command** Displays the torque producing (q-axis) current command.	Units: Default: Min/Max: Scale:	% 0.0 -/+800.0 x 10		RO	16-bit Integer
496	**Ids Command** Displays the flux producing (d-axis) current command.	Units: Default: Min/Max: Scale:	% 0.0 -/+800.0 x 10		RO	16-bit Integer
497	**Vqs Command** Displays the command for initiation of voltage on the torque producing axis (q-axis).	Units: Default: Min/Max: Scale:	% 0 -/+200 100 = 8192		RO	16-bit Integer
498	**Vds Command** Displays the command for initiation of voltage on the flux producing axis (d-axis).	Units: Default: Min/Max: Scale:	% 0 -/+200 100 = 8192		RO	16-bit Integer
499	**Trq CurFdbk (Iq)** Displays torque producing (q-axis) current feedback.	Units: Default: Min/Max:	P.U. 0.0000 -/+8.0000		RO	Real
500	**Bus Util Limit** Sets the maximum allowed bus voltage utilization for the Motor Control. Do not change this value. Higher values may result in control instability or over-current faults.	Units: Default: Min/Max: Scale:	% 90.0 0.0/100.0 100 = 8192		RW	16-bit Integer
501	**Torque En Dly** Sets the delay between the time the drive is enabled and the time the Motor Control applies torque.	Units: Default: Min/Max: Scale:	mSec 100 0/32767 100 = 8192		RW	16-bit Integer
502	**Rotor Resistance** Displays rotor resistance, as determined by the auto-tune procedure. Scaled to percent of rated motor impedance. Do not change this value.	Units: Default: Min/Max: Scale:	% 1.00 0.00/100.00 100 = 8192		RW	16-bit Integer
503	**Current Reg BW** Sets the bandwidth for the current regulator. Par 402 [PWM Frequency] limits the maximum value. Reducing the value reduces current regulator over-shoot.	Units: Default: Min/Max:	R/S 600 100/30000		RW	16-bit Integer
504	**PM AbsEncd Offst** Determined by auto-tune procedure.	Default: Min/Max:	0 0/65535		RW	16-bit Integer

No.	Name Description	Values			Linkable	Read-Write	Data Type
505	**PM TestWait Time** Defines the time interval used for the automated measurement of Par 504 [PM AbsEncd Offst] for a Permanent Magnet (PM) motor.	Units: Default: Min/Max:	mSec 2000 500/5000			RW	16-bit Integer
506	**PM Test Idc Ramp** Defines the ramp rate of the Flux Producing (d-axis) current reference that is used for the automated measurement of Par 504 [PM AbsEncd Offst] for a Permanent Magnet (PM) motor.	Units: Default: Min/Max: Scale:	%/mS 0.1 0.0/195.3 x 10			RW	16-bit Integer
507	**PM Test FreqRamp** Defines the ramp rate of the frequency reference that is used for the automated measurement of Par 504 [PM AbsEncd Offst] for a Permanent Magnet (PM) motor.	Units: Default: Min/Max: Scale:	%/mS 0.1 0.0/195.3 x 10			RW	16-bit Integer
508	**PM Test Freq Ref** Defines the frequency reference that is used for the automated measurement of Par 504 [PM AbsEncd Offst] for a Permanent Magnet (PM) motor.	Units: Default: Min/Max: Scale:	% 10.0 -/+799.9 x 10			RW	16-bit Integer
509	**PM Test I Ref** Defines the amplitude of the Flux Producing (d-axis) current reference that is used for the automated measurement of Par 504 [PM AbsEncd Offst] for a Permanent Magnet (PM) motor.	Units: Default: Min/Max: Scale:	% 30.0 0.0/799.9 x 10			RW	16-bit Integer

510 **FVC Mode Config**

Configures Field Oriented Control (FOC) operation.

Notes: Bit changes were made for firmware version 2.03. Bits 10 and 11 were added for firmware version 3.01.

ATTENTION: Do not modify this parameter. Motor/Drive instabilities and damage could result.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	SrLss RdThru	VltMinorLpEn	SoftAdptGain	Reserved	Reserved	Reserved	Reserved	LwSpdRfictWv	Slip Reg En	SlipGain Est	Reserved	SlipPrloadEn	SlipSlewRtEn	RefIWaveComp	BusGain Comp	Reserved	Flux Reg Use	Flux Reg En	Reserved	Reserved	Reserved	Reserved	Reserved
Default	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	0	0	0	1	1	0	1	1	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

511 **FVC2 Mode Config**

Configures Field Oriented Control - 2 (FOC2) operation.

Notes: Bit changes were made for firmware version 2.03. This parameter was changed to non-linkable for firmware version 3.01.

ATTENTION: Do not modify this parameter. Motor/Drive instabilities and damage could result.

Options	LnfSnsr Dir	LnfSnsr Use	Reserved	FlxRatRf Use	NTC Active	Reserved	Reserved	CEMF We Use	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	BusGain Comp	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Default	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values			Linkable	Read-Write	Data Type

512 **PMag Mode Config**

Configures Permanent Magnet (PM) operation.

Notes: Bit changes were made for firmware version 2.03. This parameter was changed to non-linkable for firmware version 3.01.

ATTENTION: Do not modify this parameter. Motor/Drive instabilities and damage could result.

Options	LinrSnsr Dir	LinrSnsr Use	Reserved	FlxRatRf Use	Reserved	Reserved	Reserved	CEMF We Use	Reserved	Reserved	Reserved	Reserved	PMVltRegUse	PMVltRegEn	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	BusGain Comp	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Default	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

513 **V/Hz Mode Config**

Configures V/Hz control mode operation.

Note: This parameter was added for firmware version 2.03.

ATTENTION: Do not modify this parameter. Motor/Drive instabilities and damage could result.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	VltMinorLpEn	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	RefltWaveComp	BusGain Comp	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Default	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

514 **Test Mode Config**

Configures the Motor Control (MC) test mode.

Note: This parameter was changed to non-linkable for firmware version 3.01.

ATTENTION: Do not modify this parameter. Motor/Drive instabilities and damage could result.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	RefltWave Comp	BusGain Comp	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values			Linkable	Read-Write	Data Type

515 **FVC Tune Config**
Configures FOC tuning mode.

ATTENTION: Do not modify this parameter. Motor/Drive instabilities and damage could result.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	NoRotateTune	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

516 **FVC2 Tune Config**
Configures FOC 2 tuning mode.

ATTENTION: Do not modify this parameter. Motor/Drive instabilities and damage could result.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	NoRotateTune	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

517 **PMag Tune Config**
Configures Permanent Magnet Motor tuning mode.

ATTENTION: Do not modify this parameter. Motor/Drive instabilities and damage could result.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	IndTestA set	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

518 **MC Diag Status**
Indicates the status of the MC diagnostic tests.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	PwrDiagFltPt	PM EncOffset	Rot Dir Chk	CommCntEncls	Comm Count	CommParamCal	CommLmEncles	Comm Lm Meas	Comm SigmaLs	Comm Rs Meas	PDgTrWP-VNOn	PDgTrWP-UNOn	PDgTrVP-WNOn	PDgVP-UNOn	PDgUP-WNOn	PDgTrUP-VNOn	PDgTrUNWNOn	PDgTrUPWPOn	Pdiag TrWNOn	Pdiag TrVNOn	Pdiag TrUNOn	Pdiag TrWPOn	Pdiag TrVPOn	Pdiag TrUPOn	Pdg VbusSens
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values			Linkable	Read-Write	Data Type
519	**MC Diag Done** Indicates which MC diagnostic tests are completed.						

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	PwrDiagFltPt	PM EncOffset	Rot Dir Chk	CommCntEnds	Comm Count	CommParamCal	CommLmEncles	Comm Lm Meas	Comm SigmaLs	Comm Rs Meas	PDgTrWP-VNOn	PDgTrWP-UNOn	PDgTrVP-WNOn	PDgVP-UNOn	PDgUP-WNOn	PDgTrUP-VNOn	PDgTrUNWNOn	PDgTrUPWPOn	Pdiag TrWNOn	Pdiag TrVNOn	Pdiag TrUNOn	Pdiag TrWPOn	Pdiag TrVPOn	Pdiag TrUPOn	Pdg VbusSens
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

520	**PM Q Inductance** Indicates the percent-per unit inductance of the motor stator in the torque producing (q-axis).	Units: Default: Min/Max: Scale:	% 20.00 0.00/399.99 100 = 8192		RW	16-bit Integer
521	**PM D Inductance** Indicates the percent-per unit inductance of the motor stator in the flux producing (d-axis).	Units: Default: Min/Max: Scale:	% 20.00 0.00/399.99 100 = 8192		RW	16-bit Integer
522	**PM Stator Resist** Indicates the percent-per unit resistance of the motor stator.	Units: Default: Min/Max: Scale:	% 1.50 0.00/100.00 100 = 8192		RW	16-bit Integer
523	**PM Mtr CEMF Coef** Indicates the coefficient for Counter Electro Motive Force (CEMF) voltage, normalized to base motor speed.	Units: Default: Min/Max: Scale:	% 89.99 0.00/399.99 100 = 8192		RW	16-bit Integer
525	**Slip Ratio** Used by the Field Oriented Control - 2 (FOC2) mode. Indicates the present operating slip frequency at 100% Torque Producing Current (Iqs) scaled to hertz x 100.	Units: Default: Min/Max: Scale:	Hz 0.00 0.00/327.67 x 10		RO	16-bit Integer
526	**Stator Frequency** Displays stator frequency as a percentage of Par 3 [Motor NP Hertz].	Units: Default: Min/Max: Scale:	% 0.0 -/+800.0 x 10		RO	16-bit Integer
527	**Start/Acc Boost** Sets the voltage boost level for starting and acceleration when “Custom V/Hz” mode is selected. Note: This parameter was added for firmware version 2.03.	Units: Default: Min/Max:	VAC 50.0 0.0/1150.0		RW	16-bit Integer
528	**Run Boost** Sets the boost level for steady state or deceleration when “Fan/Pmp V/Hz” or “Custom V/Hz” modes are selected. Note: This parameter was added for firmware version 2.03.	Units: Default: Min/Max:	VAC 50.0 0.0/1150.0		RW	16-bit Integer
529	**Break Voltage** Sets the voltage the drive will output at parameter 530 [Break Frequency]. Note: This parameter was added for firmware version 2.03.	Units: Default: Min/Max:	VAC 1150.0 0.0/6900.0		RW	16-bit Integer
530	**Break Frequency** Sets the frequency the drive will output at parameter 529 [Break Voltage]. Note: This parameter was added for firmware version 2.03.	Units: Default: Min/Max:	Hz 150.0 0.0/400.0		RW	16-bit Integer
531	**Maximum Voltage** Sets the highest voltage the drive will output. Note: This parameter was added for firmware version 2.03.	Units: Default: Min/Max:	VAC 460.0 60.0/690.0		RW	16-bit Integer
532	**Maximum Freq** Sets the highest frequency the drive will output. Note: This parameter was added for firmware version 2.03.	Units: Default: Min/Max:	Hz 1300.0 50.0/4000.0		RW	16-bit Integer
533	**Flux Gain Adjust** Adjusts the flux level used to enter the field weakening range. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1055.0 921.0/1126.0		RW	16-bit Integer
537	**SrLssAngleStblty** Adjusts the electrical angle to maintain stable motor operation. An increase in the value increases the angle adjustment.	Default: Min/Max:	51.0 0.0/32767.0		RW	16-bit Integer
538	**SrLss VoltStblty** Adjusts the voltage to maintain stable motor operation. An increase in the value increases the output voltage adjustment.	Default: Min/Max:	93.0 0.0/32767.0		RW	16-bit Integer
539	**SrLss StbltyFilt** The coefficient is used to adjust the bandwidth of a low pass filter. The smaller the value of the coefficient, the lower the bandwidth of the filter.	Default: Min/Max:	3250.0 0.0/32767.0		RW	16-bit Integer

No.	Name Description	Values			Linkable	Read-Write	Data Type
540	**V/Hz Status** Indicates the limit status of the V/Hz Control Operation. Note: This parameter was added form firmware version 2.03.						
541	**SrLss Angl Comp** TBD Note: This parameter was added for future use - not active for use with firmware version 2.03.	Default: Min/Max:	0.0 +/- 16384			RW	16-bit Integer
542	**SrLss Volt Comp** TBD Note: This parameter was added for future use - not active for use with firmware version 2.03.	Units: Default: Min/Max:	Volts 100.0 +/- 1000.0			RW	16-bit Integer
545	**Bus Reg Ki** Sets the responsiveness of the bus regulator. Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	450.0 0.0/100000			RW	16-bit Integer
546	**Bus Reg Kp** Proportional gain for the bus regulator. Used to adjust regulator response. Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	1500.0 0.0/10000.0			RW	16-bit Integer
547	**Bus Reg Kd** Derivative gain for the bus regulator. Used to control regulator overshoot. Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	1000.0 0.0/10000.0			RW	16-bit Integer
548	**Bus Reg ACR Kp** This proportional gain, in conjunction with Par 545 [Bus Reg Ki], adjusts the output frequency of the drive during a bus limit or inertia ride through condition. The output frequency is adjusted in response to an error in the active, or torque producing, current to maintain the active bus limit, or inertia ride through bus reference. A larger value of gain reduces the dynamic error of the active current. Note: This parameter was added for firmware version 2.03.	Default: Min/Max:	225.0 0.0/100000			RW	16-bit Integer
549	**Vuv Fdbk Offset** Displays the motor U phase to V phase offset voltage from the voltage feedback circuit. The value of the offset is a uni-polarity signal. A zero offset is equal to 16384. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	16384.0 15764.0/17004.0			RW	16-bit Integer
550	**Vvw Fdbk Offset** Displays the motor V phase to W phase offset voltage from the voltage feedback circuit. The value of the offset is a uni-polarity signal. A zero offset is equal to 16384. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	16384.0 15764.0/17004.0			RW	16-bit Integer
551	**CurrFdbk AdjTime** Compensates for current feedback delays in High Horse Power drives (frames 9 and up). Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	uSec 0.0 0.0/50.0			RW	16-bit Integer
552	**Slip Preload Val** The Slip Gain value to be pre-loaded if the drive is powered down. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	120.0 0.0/8192.0			RW	32-bit Integer
553	**Slip Slew Rate** Sets the rate at which the Slip Gain Regulator output transitions from the inactive state to the active state. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	uSec 2.000 0.010/16.383			RW	Real

Options

	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Bus Volt Lim	Current Lim
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values			Linkable	Read-Write	Data Type

554 **LED Status**

Bit 0 [Sts Active] - Drive running, no faults are present
Bit 1 [Sts Ready] - Drive ready, but not running & no faults are present
Bit 2 [Sts HW Fault] - A non-resettable fault has occurred in the drive
Bit 3 [Sts Fault] - A fault has occurred in the drive
Bit 4 [Sts Alarm] - A type 1 (user configurable) alarm condition exists, but the drive continues to run
Bit 5 [Sts RunInhbt] - A type 2 (non-configurable) alarm condition exists, drive continues to run
Bit 6 [Sync InSync] - The module is configured as the time keeper or the module is configured as a follower and synchronization is complete
Bit 7 [Sync NotSync] - The follower(s) are not configured with the time keeper
Bit 8 [DL Run Mode] - The controller is in “Run” mode
Bit 9 [DL Force Act] - I/O forces are active (enabled) but may or may not exist
Bit 10 [DL ForceNtEn] - One or more input or output addresses have been forced to an On or Off state, but the forces have not been enabled
Bit 11 [DL Battery] - Either the battery is not installed or 95% discharged and should be replaced
Bit 12 [DL I/O Activ] - The controller is communicating with all the devices in its I/O configuration
Bit 13 [DL I/O Alarm] - One or more devices in the I/O configuration of the controller are not responding
Bit 14 [DL I/O Fault] - The controller is not communicating to any devices and is faulted
Bit 15 [DL ComActive] - RS-232 activity
Bit 16 [DL Fault] - The controller detected a non-recoverable fault, so it cleared the project from memory.
Bit 17 [DL NotActive] - If the controller is a new, then it requires a firmware update, or if the controller is not new, a major fault occurred
Bit 18 [DL OK] - Controller is OK
Bit 19 [DL Loading] - The controller is storing or loading a project to or from nonvolatile memory
Bit 20 [DL CF Flash] - The controller is reading from or writing to the CompactFlash™ card
Bit 21 [DL CF Format] - The CompactFlash memory is not initialized
Bit 22 [DL CF Error] - CompactFlash card does not have a valid file system
Note: This parameter was added for firmware version 3.01.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	DL CF Error	DL CF Format	DL CF Flash	DL Loading	DL OK	DL NotActive	DL Fault	DL ComActive	DL I/O Fault	DL I/O Alarm	DL I/O Activ	DL Battery	DL ForceNtEn	DL Force Act	DL Run Mode	Sync NotSync	Sync InSync	Sts RunInhbt	Sts Alarm	Sts Fault	Sts HW Fault	Sts Ready	Sts Active
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

555 **MC Status**

Indicates the status of the Motor Control (MC) Processor and related functions.

Options	Min Vqs	MaxDCBus Vqs	MaxMotor Vqs	Max Vds	Min Vds	SrLssWsLimit	Slip Limit	Regen	Iqs Limit	FldWeakening	MC FW Group2	Reserved	Reserved	Reserved	Reserved	FluxRatioRef	Command Lim	DC Bus Low	MC Test Mode	PreChrg Req	PWM En	PreChrg Done	Flux En	Torque En	Change Dir	MC CommisFlt	MC CommisRun	MC Fault	MC Ready	BaseBlockReq	TorqueRunReq	Flux Run Req	MC En Req
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

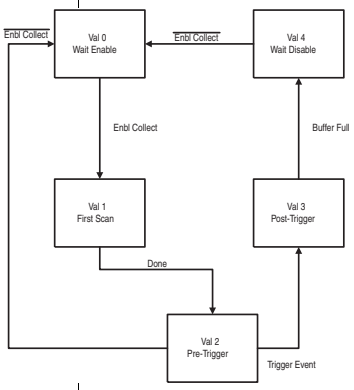
556 **Trend Control**

Set bits to configure the Data Trend function:

- Bit 0 [Enbl Collect] - Trend data collection begins on the rising edge of this bit and continues until either this bit is set low or the trend data has been completely collected. This bit should be cleared following either the 'Triggered' status or 'Complete' status in order to complete the trend sequence. This bit can also be cleared at any time to force the trend data sampling to stop and set the 'Complete' status bit.
- Setting bit 1 [In1 Real] - specifies the Real data type for Trend Input 1. The source for Real data is Par 571 [Trend In1 Real]. Clearing the bit specifies the Integer data type. The source for Integer data is Par 570 [Trend In1 DInt].
- Setting bit 2 [In2 Real] - specifies the Real data type for Trend Input 2. The source for Real data is Par 575 [Trend In2 Real]. Clearing the bit specifies the Integer data type. The source for Integer data is Par 574 [Trend In2 DInt].
- Setting bit 3 [In3 Real] - specifies the Real data type for Trend Input 3. The source for Real data is Par 579 [Trend In3 Real]. Clearing the bit specifies the Integer data type. The source for Integer data is Par 578 [Trend In3 DInt].
- Setting bit 4 [In4 Real] - specifies the Real data type for Trend Input 4. The source for Real data is Par 583 [Trend In4 Real]. Clearing the bit specifies the Integer data type. The source for Integer data is Par 582 [Trend In4 DInt].
- Setting bit 15 [Auto Output] causes the trend output parameters to automatically cycle through the entire trend buffer at the rate specified in Par 559 [Trend Rate]. Typically, you link the output to an analog output for display on an oscilloscope.
- Auto output is accomplished by writing to Par 569 [TrendBuffPointer]. Clearing this bit requires manual selection of Par 569 [TrendBuffPointer] to view the trend buffer contents.

Options	Auto Output	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	In 4 Real	In 3 Real	In 2 Real	In 1 Real	Enbl Collect
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values			Linkable	Read-Write	Data Type
557	**Trend Status** Bits indicate the status of the Data Trend function: • Bit 1 [Triggered] indicates a Trend Trigger event has been detected. This bit will clear in response to the rise of Par 556 [Trend Control] / bit 0 [Enbl Collect]. • Bit 2 [Complete] indicates all the post trigger data samples have been gathered and the trend buffers are full. It will also be set if the Par 556 [Trend Control] / bit 0 [Enbl Collect] is cleared before the trigger occurs. The trend data outputs will be updated from the contents of the trend buffer data when this bit is set. Par 556 [Trend Control] / bit 0 [Enbl Collect] can be cleared after this bit is set without affecting the trend data buffer contents. This bit will clear in response to the rise of Par 556 [Trend Control] / bit 0 [Enbl Collect]. The trend outputs will be forced to zero while this bit is clear.						
	Options: Reserved Complete Triggered Reserved						
	Default: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			0 = False			
	Bit: 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0			1 = True			
558	**Trend State** Value indicates the state of the Data Trend function. • Value 0 - Wait Enable indicates the trend function is ready and waiting to begin data collection. Setting bit 0 [Enbl Collect] of Par 556 [Trend Control] will cause data collection to begin. In this state, Par 569 [TrendBuffPointer] and the Trend Output Parameters are active. • Value 1 - First Scan indicates the Trend function is executing the first pass through the trend sample buffer. This takes 512 ms. (0.5 ms x 1024 samples). When it enters this state, the Trend function clears bit 1 [Triggered] and 2 [Complete] bits of Par 557 [Trend Status]. While in this state, the Trend function refreshes the data. Also while in this state, the function forces the Trend Output parameters to zero. When done, it enters the Pre-trigger state. • Value 2 - Pre-trigger indicates the Trend function is sampling the trend inputs and storing them in memory, at a rate determined by Par 559 [Trend Rate]. Sampling continues until either the trend trigger event occurs or bit 0 [Enbl Collect] of Par 556 [Trend Control] is cleared. While in this state, the Trend function forces the Trend Output parameters to zero. If the trigger event occurs, the function sets bit 1 [Triggered] of Par 557 [Trend Status] and enters the Post-trigger state. If bit 0 [Enbl Collect] of Parameter 556 [Trend Control] is cleared, the function sets bit 2 [Complete] of Par 557 [Trend Status] and returns to the Wait Enable state. • Value 3 - Post-trigger indicates the Trend function is continuing to sample and save the trend inputs until the buffer is full. While in this state, the function forces the Trend Output parameters to zero value. When the buffer is full, the function sets bit 2 [Complete] of Par 557 [Trend Status] and enters the Wait Disable state. • Value 4 - Wait Disable indicates the Trend function is complete and waiting for bit 0 [Enbl Collect] of Par 556 [Trend Control] to be cleared. When this is done, the trend function returns to the Wait Enable state. While in the Wait Disable state, Par 569 [TrendBuffPointer] and the Trend Output Parameters are active.	Default: 0 = "Wait Enable" Options: 0 = "Wait Enable" 1 = "First Scan" 2 = "Pre-trigger" 3 = "Post-trigger" 4 = "Wait Disable"  					
559	**Trend Rate** Sets the sample time for both trend input and output updates.	Units: mSec Default: 0.5000 Min/Max: 0.5000/1000.0000l		✓	RW	Real	
560	**Trend TrigA Int** Provides the integer input for the A trigger function. This integer is converted to a real number and summed with Par 561 [Trend TrigA Real]. The result is compared with the Trigger B sum. If the A sum exceeds the B sum, then a trend trigger will occur.	Default: 0 Min/Max: -/+2147483648		✓	RW	32-bit Integer	
561	**Trend TrigA Real** Provides the real input for the A trigger function. This real number is summed with Par 560 [Trend TrigA Int]. The result is compared with the Trigger B sum. If the A sum exceeds the B sum, then a trend trigger will occur.	Default: 0.0000 Min/Max: -/+2200000000.0000		✓	RW	Real	
562	**Trend TrigB Int** Provides the integer input for the B trigger function. This integer is converted to a real number and summed with Par 563 [Trend TrigB Real]. The result is compared with the Trigger A sum. If the A sum exceeds the B sum, then a trend trigger will occur.	Default: 0 Min/Max: -/+2147483648		✓	RW	32-bit Integer	
563	**Trend TrigB Real** Provides the real input for the B trigger function. This real number is summed with Par 562 [Trend TrigB Int]. The result is compared with the Trigger A sum. If the A sum exceeds the B sum, then a trend trigger will occur.	Default: 0.0000 Min/Max: -/+2200000000.0000		✓	RW	Real	
564	**Trend Trig Data** This is the logic input for the Trend Trigger Function. A trigger will occur on the rise of the specified bit in this word. The bit will be specified by Par 565 [Trend Trig Bit].	Default: 00000000000000000000000000000000 Min: 00000000000000000000000000000000 Max: 11111111111111111111111111111111		✓	RW	32-bit Boolean	
565	**Trend Trig Bit** Specifies the bit in Par 564 [Trend Trig Data] that will cause a Trend Trigger to occur. Positive numbers specify rising edges and negative numbers specify falling edges.	Default: 0 Min/Max: -32/31		✓	RW	16-bit Integer	
566	**Trend PreSamples** Specifies the number pre-trigger samples in the trend buffer. Pre-trigger samples are the samples that occur before the trigger and remain in the buffer. The remainder of the trend buffer will contain post-trigger samples.	Default: 511 Min/Max: 0/1022 j		✓	RW	16-bit Integer	

No.	Name Description	Values		Linkable	Read-Write	Data Type
567	**Trend Mark DInt** Marks the start of data for trend buffers that are using integer data. The Trend Marker can be used to provide a scope trigger signal for the Auto Output function.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
568	**Trend Mark Real** Marks the start of data for trend buffers that are using real data. The Trend Marker can be used to provide a scope trigger signal for the Auto Output function.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
569	**TrendBuffPointer** Selects the trend buffer element to be displayed in the Trend Output Parameters when the trend function is inactive (not collecting data samples). A zero value points to the element that corresponds to the trigger event. Negative values point to pre-trigger data. Positive values point to post-trigger data. When the Auto Output function is running, this parameter will automatically sequence through it's full range, at a rate set by Par 559 [Trend Rate].	Default: Min/Max:	0 -/+1023	✓	RW	16-bit Integer
570	**Trend In1 DInt** Provides integer input to the Trend 1. The Trending function samples this parameter for Trend Buffer 1, if bit 1 [In 1 Real] is cleared.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
571	**Trend In1 Real** Provides real input to the Trend 1. The Trending function samples this parameter for Trend Buffer 1, if bit 1 [In 1 Real] is set.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
572	**Trend Out1 DInt** Displays the output for Trend Buffer 1, if the buffer is using integer data. This will equal the value of the element, in Trend Buffer 1, specified by Par 569 [TrendBuffPointer].	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
573	**Trend Out1 Real** Displays the output for Trend Buffer 1, if the buffer is using real data. This will equal the value of the element, in Trend Buffer 1, specified by Par 569 [TrendBuffPointer].	Default: Min/Max:	0.0000 -/+2200000000.0000		RO	Real
574	**Trend In2 DInt** Provides integer input to the Trend 2. The Trending function samples this parameter for Trend Buffer 2, if bit 2 [In 2 Real] is cleared.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
575	**Trend In2 Real** Provides real input to the Trend 2. The Trending function samples this parameter for Trend Buffer 2, if bit 2 [In 2 Real] is set.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
576	**Trend Out2 DInt** Displays the output for Trend Buffer 2, if the buffer is using integer data. This will equal the value of the element, in Trend Buffer 2, specified by PPar 569 [TrendBuffPointer].	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
577	**Trend Out2 Real** Displays the output for Trend Buffer 2, if the buffer is using real data. This will equal the value of the element, in Trend Buffer 2, specified by Par 569 [TrendBuffPointer].	Default: Min/Max:	0.0000 -/+2200000000.0000		RO	Real
578	**Trend In3 DInt** Provides integer input to the Trend 3. The Trending function samples this parameter for Trend Buffer 3, if bit 3 [In 3 Real] is cleared.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
579	**Trend In3 Real** Provides real input to the Trend 3. The Trending function samples this parameter for Trend Buffer 3, if bit 3 [In 3 Real] is set.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
580	**Trend Out3 DInt** Displays the output for Trend Buffer 3, if the buffer is using integer data. This will equal the value of the element, in Trend Buffer 3, specified by Par 569 [TrendBuffPointer].	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
581	**Trend Out3 Real** Displays the output for Trend Buffer 3, if the buffer is using real data. This will equal the value of the element, in Trend Buffer 3, specified by Par 569 [TrendBuffPointer].	Default: Min/Max:	0.0000 -/+2200000000.0000		RO	Real
582	**Trend In4 DInt** Provides integer input to the Trend 4. The Trending function samples this parameter for Trend Buffer 4, if bit 4 [In 4 Real] is cleared.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
583	**Trend In4 Real** Provides real input to the Trend 4. The Trending function samples this parameter for Trend Buffer 4, if bit 4 [In 4 Real] is set.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
584	**Trend Out4 DInt** Displays the output for Trend Buffer 4, if the buffer is using integer data. This will equal the value of the element, in Trend Buffer 4, specified by Par 569 [TrendBuffPointer].	Default: Min/ Max::	0 -/+2147483648		RO	32-bit Integer
585	**Trend Out4 Real** Displays the output for Trend Buffer 4, if the buffer is using real data. This will equal the value of the element, in Trend Buffer 4, specified by Par 569 [TrendBuffPointer].	Default: Min/ Max::	0 -/+2200000000.0000		RO	Real
600	**Lgx Comm Format** Indicates the Controller to Drive communication format.	Default: Options:	16 = "Speed Ctrl" 0 = "Not Used" 18 = "UserDefin 1" 16 = "Speed Ctrl" 19 = "Motion" 17 = "PositionCtrl" 32 = "CustmUserDef" Note: Option values 1 - 15 and 20 - 31 are "Reserved"			

No.	Name Description	Values			Linkable	Read-Write	Data Type
601	**From DL DataType** Sets the type of data for each word communicated from DriveLogix™ to the PowerFlex 700S drive. Setting a bit High will configure the associated word as a Real data type and setting the bit Low will configure it for Integer data type.						

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	DL 20 Real	DL 19 Real	DL 18 Real	DL 17 Real	DL 16 Real	DL 15 Real	DL 14 Real	DL 13 Real	DL 12 Real	DL 11 Real	DL 10 Real	DL 09 Real	DL 08 Real	DL 07 Real	DL 06 Real	DL 05 Real	DL 04 Real	DL 03 Real	DL 02 Real	DL 01 Real	DL 00 Real	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

No.	Name Description	Values			Linkable	Read-Write	Data Type
602 to 622	**FromDriveLogix00** to **FromDriveLogix20** These parameters display the input values communicated from the DriveLogix controller to the PowerFlex 700S drive.	Default: Min/Max:	0 -/+32 (dependant on Par 601 [From DL DataType])			RO	32-bit Integer

No.	Name Description	Values			Linkable	Read-Write	Data Type
625	**To DL DataType** Sets the data type for each word communicated from the PowerFlex 700S drive to DriveLogix. Setting a bit High will configure the associated word as a Real data type and setting the bit Low will configure it for Integer data type.						

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	DL 20 Real	DL 19 Real	DL 18 Real	DL 17 Real	DL 16 Real	DL 15 Real	DL 14 Real	DL 13 Real	DL 12 Real	DL 11 Real	DL 10 Real	DL 09 Real	DL 08 Real	DL 07 Real	DL 06 Real	DL 05 Real	DL 04 Real	DL 03 Real	DL 02 Real	DL 01 Real	DL 00 Real	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

No.	Name Description	Values			Linkable	Read-Write	Data Type
626 to 646	**To DriveLogix00** to **To DriveLogix20** These parameters display the output values communicated from the PowerFlex 700S drive to the DriveLogix controller.	Default: Min/Max:	0 -/+32 (dependant on Par 625 [To DL DataType])		✓	RO	Set by Par 625

No.	Name Description	Values			Linkable	Read-Write	Data Type
650	**DPI In DataType** Sets the data type for each word communicated from an external controller to the PowerFlex 700S drive via a DPI communication module. Setting a bit High will configure the associated word as a Real data type and setting the bit Low will configure it for Integer data type.						

Options	DPI D2 Real	DPI D1 Real	DPI C2 Real	DPI C1 Real	DPI B2 Real	DPI B1 Real	DPI A2 Real	DPI A1 Real	
Default	0	0	0	0	0	0	0	0	0 = False 1 = True
Bit	7	6	5	4	3	2	1	0	

No.	Name Description	Values			Linkable	Read-Write	Data Type
651 652 653 654 655 656 657 658	**DPI Data In A1** **DPI Data In A2** **DPI Data In B1** **DPI Data In B2** **DPI Data In C1** **DPI Data In C2** **DPI Data In D1** **DPI Data In D2** These parameters display the input values communicated from DPI communication modules to the PowerFlex 700S drive.	Default: Min/Max:	0 -/+32 (dependant on Par 625 [To DL DataType])			RO	32-bit Integer

No.	Name Description	Values			Linkable	Read-Write	Data Type
659	**DPI Out DataType** Sets the data type for each word communicated from the PowerFlex 700S drive to an external controller via a DPI communication module. Setting a bit High will configure the associated word as a Real data type and setting the bit Low will configure it for Integer data type.						

Options	DPI D2 Real	DPI D1 Real	DPI C2 Real	DPI C1 Real	DPI B2 Real	DPI B1 Real	DPI A2 Real	DPI A1 Real	
Default	0	0	0	0	0	0	0	0	0 = False 1 = True
Bit	7	6	5	4	3	2	1	0	

No.	Name Description	Values		Linkable	Read-Write	Data Type
660 661 662 663 664 665 666 667	**DPI Data Out A1** **DPI Data Out A2** **DPI Data Out B1** **DPI Data Out B2** **DPI Data Out C1** **DPI Data Out C2** **DPI Data Out D1** **DPI Data Out D2** These parameters display the output values communicated from the PowerFlex 700S drive to DPI communication modules.	Default: Min/Max:	0 -/+32 (dependant on Par 625 [To DL DataType])	✓	RW	Set by Par 659

669 **Write Mask**
Enables/disables write access (parameters, links, etc.) for DPI ports. Changes to this parameter only become effective when power is cycled, the drive is reset or bit 15 "Security" of Par 712 [Write Mask Act], transitions from "1" to "0."
Note: This parameter was added for firmware version 3.01.

Options	DriveLogix	Reserved	Int DPI Comm	Reserved	Aux DPI Conn	Ext DPI Conn	Local HIM	Terminal Blk
Default	0	0	0	0	0	0	0	0
Bit	7	6	5	4	3	2	1	0

0 = False
1 = True

670 **Logic Mask**
Determines which adapters can control the drive.

671 **Start Mask**
Controls which adapters can issue start commands.

672 **Jog Mask**
Controls which adapters can issue jog commands.

673 **Direction Mask**
Controls which adapters can issue forward/reverse direction commands.

674 **Fault Clr Mask**
Controls which adapters can clear a fault.

677 **Stop Owner**
Indicates which adapters that are presently issuing a valid stop command.

678 **Start Owner**
Indicates which adapters that are presently issuing a valid start command.

679 **Jog Owner**
Indicates which adapters that are presently issuing a valid jog command.

680 **Direction Owner**
Indicates which adapter is currently has exclusive control of direction changes.

681 **Fault Clr Owner**
Indicates which adapter is currently clearing a fault.

Options	DriveLogix	Reserved	Int DPI Conn	Reserved	Aux DPI Conn	Ext DPI Conn	Local HIM	Terminal Blk
Default	1	1	1	1	1	1	1	1
Bit	7	6	5	4	3	2	1	0

0 = False
1 = True

684	**MotnUpdatePeriod** Servo update period for the servo axis (drive).	Unit: Default: Min/Max:	uSec 2000 1/999999		RO	32-bit Integer
685	**Motn CoarseMulti** Number of Par 684 [MotnUpdatePeriod] comprising one Course Update Period from the Motion Period.	Default: Min/Max:	4 2/16		RO	32-bit Integer

686 **Motn Config**
Configuration bits pertaining to Motion-related functions for the Servo axis.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Hrd Ovr Trvl	Sft Ovr Trvl	Polarity Neg
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values	Linkable	Read-Write	Data Type

687 **Motn Axis Status**
Status bits pertaining to Motion-related functions for the Servo axis.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	AxisShtdwnC1	Reserved	Reserved	Chng Ref	Reserved	Reserved	Course Updt	CST Updt Err	-Hrd OvrTrvl	+Hrd OvrTrvl	-Sft OvrTrvl	+Sft OvrTrvl	Reserved	Reserved	Reserved	Posit Lock	AxisShutdown	Drv Enable	Motn Action
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

688 **Motn AxisControl**
Command request bits from the Motion Planner both the Servo and Feedback Only Axis.

Options	ChngCmdRefC1	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Abrt Evnt C1	Abrt Home C1	Reserved	Shutdown C1	Reserved	ChngCmdRefC0	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Abrt Evnt C0	Abrt Home C0	Reserved	Shutdown C0	Reserved
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

689 **Motn Axis Resp**
Command response from both the Servo and Feedback Only Axis to the Motion Planner.

Options	ChngPosRefC1	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Abrt Evnt C1	Abrt Home C1	Reserved	Shutdown C1	Reserved	Chng XRef C0	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Abrt Evnt C0	Abrt Home C0	Reserved	Shutdown C0	Reserved
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

690 **Motn Cnct Status**
Status of all Motion connections. Also includes status for the configuration state relating to motion connections.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	MSO Input	Drive Ready	Asynch Cnct	Event Cnct	Synch Cnct	UserIO Cnct	Config OK
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

691 **Motn EventStatus**
Status of all events supported by the Motion Event Connection.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Home	Home Arm	Regis2 Posit	Regis2 X Arm	Regis1 Posit	Regis1 X Arm	Watch Posit	Watch X Arm
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

692 **Motn Event Ctrl**
Shows configuration state of Motion Event functions.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Home Axis	Event Cndt	Home Type 1	Home Type 0	Wndw Regis2	Wndw Regis1	Watch X Rev
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values			Linkable	Read-Write	Data Type
693	**Interp SynchInput** Bit zero of this parameter is used as the synchronization pulse for he Interpolator. This parameter is linked to Par 700 [Motn Posit Sync] for a Motion Servo Axis. It is linked to "Xsync Status" for a SynchLink application. Bits 1 - 4 have been changes to [Reserved] for firmware version 2.04.						

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Sync Pulse
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

694	**Motn Mx Pos Trvl** Positive soft overtravel threshold for the Motion Servo Axis.	Default: Min/Max:	0 -/+2147483648		RW	32-bit Integer
695	**Motn Mx Neg Trvl** Negative soft overtravel threshold for the Motion Servo Axis.	Default: Min/Max:	0 -/+2147483648		RW	32-bit Integer
696	**Motn PositErrTol** Position error tolerance for the Motion Servo Axis.	Default: Min/Max:	4096 0/2147483648		RW	32-bit Integer
697	**Motn PositLock Tol** Position lock tolerance for the Motion Servo Axis.	Default: Min/Max:	0 0/2147483648		RW	32-bit Integer
698	**Motn Posit Cmmd** Position command input from the Motion Planner. This is linked as the source to the interpolator's "CoursePosit Trgt."	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
699	**Motn Mx Pos Trvl** Positive soft overtravel threshold for the Motion Servo Axis.	Units: Default: Min/Max:	P.U. 0.0 -/+8.0 pu		RO	Real
700	**Motn Posit Sync** Synchronization input signal from the Motion Planner. Pulse received once per coarse update period. This is linked as the course to Par 693 [Interp SynchInput]. Note: Bits 2 - 4 have been changed to [Reserved] for firmware version 2.04.						

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	SyncDataActv	Sync Pulse
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

701	**FdbkAxis FdbkSel** Selection for the Motion Feedback Only Axis feedback source. **Note**: Options 5 and 6 are only available when compatible feedback option card is installed.	Default: Options:	0 = "Encoder 0" 0 = "Encoder 0" 1 = "Encoder 1" 2 = "Reserved" 3 = "Reserved" 4 = "Motor Sim" 5 = ""FB Opt Port0"" 6 = "FB Opt Port1" 7 = "SL DirIntRx0" 8 = "SL DirIntRx1" 9 = "SL DirIntRx2" 10 = "SL DirIntRx3"			
702	**FdbkAxis FdbkVal** Present value of the selected feedback for the Motion Feedback Only Axis.	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
703	**Motn TP Select** Selector for diagnostic testpoint relating to Motion functionality.	Default: Options:	0 = "SrvoAxisCnfgxe" 0 = "SrvoAxisCnfg" 1 = "SrvoAxisUnwd" 2 = "Marker Dist" 3 = "HomeEvent X" 4 = "Watch Posit" 5 = "Home Posit" 6 = "SrvoMRP Ofst" 7 = "SrvoAct Ofst" 8 = "PositRegis1" 9 = "PositRegis2" 10 = "FdbkAxisCnfg" 11 = "FdbkAxisUnwd" 12 = "FdbkMRP Ofst" 13 = "FdbkAct Ofst" 14 = "TimeEvntStat" 15 = "CST Lower" 16 = "CST Upper" 17 = "FBonlyFbkRaw" 18 = "Reserved" 19 = "I/O Rx Seq#" 20 = "I/O Rx Msg#" 21 = 'I/O Tx Msg#" 22 = "Syn Rx Seq#" 23 = "Syn Rx Msg#" 24 = "Syn Tx Msg#" 25 = "Evt Rx Seq#" 26 = "Evt Rx Msg#" 27 = "Evt Tx Msg#" 28 = "Asy Rx Seq#" 29 = "Asy Rx Msg#" 30 = "Asy Tx Msg#" 31 = "Reset Msg#"			

No.	Name Description	Values	Linkable	Read-Write	Data Type
704	**Motn TP Value** Data for diagnostic testpoint relating to Motion functionality.	Default: 0 Min/Max: -/+2147483648		RO	32-bit Integer
705	**Motn RotaryCmmd** Position command input from the Motion Planner to the ServoAxis when configured in rotary mode.	Default: 0 Min/Max: 0/4294967295		RO	32-bit Integer
706	**MotnUnwdTurnCmmd** Position unwind turns command input from the Motion Planner to the Servo Axis when configured in rotary mode.	Default: 0 Min/Max: -/+32767		RO	16-bit Integer
707	**SrvoAxis RotFdbk** Position feedback output to the Motion Planner for the Servo Axis when configured in rotary mode.	Default: 0 Min/Max: 0/4294967295		RO	32-bit Integer
708	**SrvoAxisUnwdFdbk** Potion unwind feedback output to the Motion Planner for the Servo Axis when configured in rotary mode.	Default: 0 Min/Max: -/+32767		RO	16-bit Integer
709	**FdbkAxis RotFdbk** Positon feedback output to the Motion Planner for the Feedback Only Axis when configured in rotary mode.	Default: 0 Min/Max: 0/4294967295		RO	32-bit Integer
710	**FdbkAxisUnwdFdbk** Position unwind feedback output to the Motion Planner for the Feedback Only Axis when configured in rotary mode.	Default: 0 Min/Max: -/+32767		RO	16-bit Integer
711	**MotnCnfgErrParam** Indicates a parameter that is not configured properly for a motion connection to be accepted. Parameter could either have a wrong value or an incorrect link. When the “Config OK” bit of “Motn Cnct Status” is set, then this parameter contains the parameter number of an incorrectly configured parameter. If more than one parameter is incorrectly configured, they are displayed after others are fixed. If there are not configuration problems relating to Motion, then this parameter contains the value of zero and the “Config OK” bit is cleared.	Default: 0 Min/Max: 0/65535		RO	16-bit Integer

712 **Write Mask Act**

Status of write access for DPI ports. When bit 15 “Security” is set, network security is controlling the write mask instead of Par 669 [Write Mask].
Note: This parameter was added for firmware version 3.01.

Options	Security	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	DriveLogix	Reserved	Int DPI Comm	Reserved	Aux DPI Conn	Ext DPI Conn	Local HIM	Terminal Blk
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

713 **Logic Mask Act**

Indicates status of the logic mask for DPI ports. When bit 15 “Security” is set, network security is controlling the logic mask instead of Par 670 [Logic Mask].
Note: This parameter was added for firmware version 3.01.

Options	Security	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	DPI Port 5	Reserved	DPI Port 3	DPI Port 2	DPI Port 1	Digital In
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

714 **Port Mask Act**

Bits 0-5 indicate status for DPI port communication. Bit 15 “Security” indicates when security software is controlling the parameter.
Note: This parameter was added for firmware version 3.01.

Options	Security	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	DPI Port 5	Reserved	DPI Port 3	DPI Port 2	DPI Port 1	Digital In
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values		Linkable	Read-Write	Data Type
717	**PLL TP Select** Phase Locked Loop test point selection. Note: This parameter was added for firmware version 3.01.	Default: Options:	0 = "Zero" 0 = "Zero" 1 = "Bg Once" 2 = "Position Err" 3 = "X to V" 4 = "Dt" 5 = "Gain" 6 = "Pos Intg" 7 = "Cal" 8 = "Epr Cal" 9 = "Num" 10 = "Denom" 11 = "Egr Ratio" 12 = "A Comp" 13 = "H Comp" 14 = "Pos Lpf Out" 15 = "Vel Lpf In" 16 = "Vel Lpf Out" 17 = "k1" 18 = "k2" 19 = "k3" 20 = "pi" 21 = "Ve Enable" 22 = "Ve In" 23 = "Ve Out" 24 = "Ve AnaPlsScl" 25 = "Ve Whl Accum" 26 = "Ve Frc AccmF" 27 = "Ve Frc Accml" 28 = "Ve Dt"			
718	**PLL TP DataDInt** Test point integer data. This data is meaningful only if the selection at Par 717 [PLL TP Select] is integer data. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
719	**PLL TP DataReal** Test point real data. This data is meaningful only if the selection at Par 717 [PLL TP Select] is not integer data. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	0.0 -/+2200000000.0000		RO	Real
720	**PLL Control** Phase Locked Loop Control. Bit 0 [Vel FdFwd En] - when set enables velocity feed forward path. When cleared, the feed forward path is disabled. Bit 1 [Ext Vel In] - When set, enables external velocity feed forward through Par 728 [PLL Ext Spd Ref]. When cleared, velocity feed forward is derived from the input device position. Bit 2 [Trckng AComp] - when set provides an element of acceleration compensation to the feed forward branch. This is not recommended for use with external inputs because of increased noise. Note: This parameter was added for firmware version 3.01.					
721	**PLL Position Ref** Physical encoder position input. This parameter is normally linked directly to the encoder position of the device chosen for input to PLL. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	0.0 -/+2147483648	✓	RW	32-bit Integer
722	**PLL BandWidth** Sets the internal bandwidth response of the PLL function in (rad/sec). The setting for very noisy mechanical systems could range from 1 to 10 (r/s) while well-behaved high line count input devices could range upwards of 100 (r/s). Higher bandwidths will quickly resolve tracking errors while the lower bandwidths will take longer to settle into a steady state. Some adjustment will be necessary to effect the best compromise between noise and tracking response. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	R/S 20.00 0.00/8000.00	✓	RW	Real
723	**PLL Rev Input** Revolution of the input encoder. This parameter must be coordinated with Par 724 [PLL Rev Out] to resolve the gear-ratio between input revolutions and output (virtual) revolutions. The ratio of input to output revolutions can always be resolved into integer values and should be reduced to their lowest common factor. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1 -/+ 1000000		RW	32-bit Integer
724	**PLL Rev Output** Revolution of the output encoder. This parameter must be coordinated with Par 723 [PLL Rev In] to resolve the gear-ratio between input revolutions and output (virtual) revolutions. The ratio of input to output revolutions can always be resolved into integer values and should be reduced to their lowest common factor. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1 1/2000000		RW	32-bit Integer
725	**PLL EPR Input** Edges Per Revolution of the physical input device. Use as high of a line count device as possible to insure smoother PLL operation. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	EPR 1048576 1/67108864		RW	32-bit Integer

Options

	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Trckng HComp	Trckng AComp	Ext Vel In	Vel FdFwd En
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values		Linkable	Read-Write	Data Type
726	**PLL EPR Output** Edges Per Revolution of virtual output device. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	EPR 1048576 1/67108864		RW	32-bit Integer
727	**PLL VirtEncdrRPM** RPM of the virtual output device. The value specified determines the 1 pu velocity at Par 734 [PLL Speed Out] and does not otherwise affect performance. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	RPM 1750.0 1.0/30000.0		RW	Real
728	**PLL Ext Spd Ref** External Speed Reference. This is a velocity feed forward input. It is normally linked to an external velocity reference or the velocity output of the chosen physical encoder. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	P.U. 0.0 -/+2200000000.0	✓	RW	Real
729	**PLL Ext SpdScale** External Speed Scale. This parameter is used to properly scale the velocity feed forward. Adjust for zero average at Par 733 [PLL FiltPositOut] while running at moderate speed. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1.0 -/+2200000000.0	✓	RW	Real
730	**PLL LPFilter BW** Low Pass Filter BandWidth (BW). The filter has two functions: • Basic noise reduction of input velocity. • Timed delay of input when feed forward is linked to an external master reference other than an input encoder. The filter BW should be set for best tracking which occurs when the filter output coincides with the Loop filter output of PLL. Usually that means setting its BW to the bandwidth of the master reference drive. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	R/S 50.00 0.00/8000.00	✓	RW	Real
731	**PLL Posit Out** Phased Locked Loop position output. This signal is precisely in phase with the input physical device. A link should be made to it from the local drive auxiliary position input. (The local drive is the one implementing PLL.) Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
732	**PLL Posit OutAdv** Phased Locked Loop position advanced output. This signal is one position sample in advance of Par 731 [PLL Posit Out]. A link is normally made to this parameter from SynchLink. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
733	**PLL FiltPositOut** Phased Locked Loop internal low pass filter output. This parameter is normally used to properly scale an external velocity reference. See description of Par 729 [PLL Ext SpdScale]. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	P.U. 0.0 -/+2200000000.0	✓	RW	Real
734	**PLL Speed Out** Phased Locked Loop velocity output. This signal is used as a velocity feed forward. It is precisely in phase with the physical input device. A link should be made to it from one of the inputs on the local drive. (The local drive is the one implementing PLL.) The 1pu RPM of this parameter is set by Par 727 [PLL VirtEncdrRPM]. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	P.U. 0.0 -/+2200000000.0	✓	RW	Real
735	**PLL SpeedOut Adv** Phase Locked Loop velocity advanced output. This signal is one velocity reference sample in advance of Par 734 [PLL Speed Out]. A link is normally made to this parameter from SynchLink. (Velocity reference is performed in the same task as the position regulator.) Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	P.U. 0.0 -/+2200000000.0	✓	RW	Real
737	**Posit TP Select** Enter or write a value to select position regulator data displayed in Par 738 [PositTP DataInt] and Par 739 [PositTP DataReal].	Default: Options:	0 = "Zero" 0 = "Zero" 1 = "del Xos Vout" 2 = "del Xcmd" 3 = "del Act Load" 4 = "del Act Mtr" 5 = "Integ Error" 6 = "Xprop Out" 7 = "Fdbk Sel Alt" 8 = "PreLim Xvout" 9 = "Limiter Out" 10 = "Ref EGR In" 11 = "OffsetSpdLim" 12 = "Pt-Pt SpdLim" 13 = "Sec per Edge" 14 = "Edge per Sec" 15 = "Ratio Guess" 16 = "Sync Count"			
738	**PositTP DataDInt** Displays the integer data selected by Par 737 [Posit TP Select]. This display should only be used if the selected value is Integer data.	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
739	**PositTP DataReal** Displays the real data selected by Par 737 [Posit TP Select]. This display should only be used if the selected value is Real data.	Default: Min/Max:	0.0 -/+8.0 pu		RO	Real

No.	Name Description	Values			Linkable	Read-Write	Data Type
740	**Position Control** Set bits to enable various position control functions. • Setting bit 1 [Speed Out En] enables position regulator output at Par 318 [Posit Spd Output]. • Setting bit 2 [Integ En] enables integrator operation. Resetting it resets the integrator. • Setting bit 3 [Integ Hold] holds integrator in present state. • Setting bit 4 [X Offset Pol] reverses polarity of offset parameters. • Setting bit 5 [X Offset Ref] permits changing the value of position offsets without changing actual position. Resetting it makes the position offset relative to the re-referenced value or the latched value upon enable if re-reference was not performed. • Bit 6 [AbsPositCtrl] may be set when a multi-turn, absolute feedback device is used for Point-to-Point positioning. Activating this bit will ReRef the position reference to the absolute feedback when position control is activated in bit 7 [Regulator On] of Par 741 [Position Status]. If the value at Par 758 [Pt-Pt Posit Ref] is different than the feedback in Par 763 [Position Actual], a position error will exist and the machine will move to position when activated. When bit 6 [AbsPositCtrl]is high, bit 9 [SetZeroPosit] of Par 740 [Position Control] may be used to set the zero "home" position accumulators. This can only be used when the drive is not in run and Par 740 [Position Control] bit 6 = 1 (true). • Setting bit 7 [AbsoluteMode] puts the position regulator in Absolute mode. • Setting bit 8 [Xzero Preset] presets Par 744 [PositRef EGR Out], Par 747 [Position Cmmd], Par 763 [Position Actual] and Par 765 [Posit Actl Load] with the value in Par 762 [Position Fdbk] minus Par 757 [Abs Posit Offset] upon drive enable. • Setting bit 10 [Pt-Pt ReRef] enables setting or changing Par 758 [Pt-Pt Posit Ref] without changing the actual position. • Setting bit 16 [X Watch1 En] enables position Watch 1. Resetting it clears Par 741 [Position Status] bit 8 [Posit Watch1]. • Setting bit 17 [X Watch1 Dir] causes Position Watch 1 output to be set when Par 763 [Position Actual] is greater than Par 780 [PositDtct1 Stpt]. Re-setting bit 17 [X Watch1 Dir] causes Position Watch 1 output to be set when Par 763 [Position Actual] is less than Par 780 [PositDtct1 Stpt]. • Setting bit 18 [X Watch2 En] enables position Watch 2. Resetting it clears Par 741 [Position Status] bit 9 [Posit Watch2]. • Setting bit 19 [X Watch2 Dir] causes Position Watch 2 output to be set when Par 763 [Position Actual] is greater than Par 781 [PositDtct2 Stpt]. Re-setting bit 19 [X Watch2 Dir] causes Position Watch 2 output to be set when Par 763 [Position Actual] is less than Par 781 [PositDtct2 Stpt]. • Setting bit 20 [Pt-Pt RampStop] enables the Ramp to Stop function for point-to-point positioning. When reset and the stop command is given during a move, the drive will stop at 0 ramp time. When set and the stop command is given during a move, the rive will ramp to zero at Par 760 [Pt-Pt Decel Time]. Note: Coast Stop or Removing Enable always causes a Coast to Stop function. Note: Bits 24 - 29 were added for future use - not active for use with firmware version 3.01.						

Options	Reserved	Reserved	Home Marker	Home Switch	Return Home	Home Dir	Pos Redefine	Find Home	Reserved	Reserved	Reserved	Pt-Pt RampStop	X Watch2 Dir	X Watch2 En	X Watch1 Dir	X Watch1 En	BscIndxStpRv	BscIndx Prst	BscIndx Rev	BscIndx Step	BscIndx Enbl	Pt-Pt ReRef	SetZeroPosit	Xzero Preset	AbsoluteMode	AbsPositCtrl	X Off ReRef	X Offset Pol	Integ Hold	Integ En	Speed Out En	Reserved	
Default	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

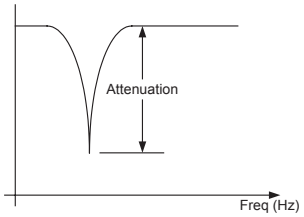
No.	Name Description	Values			Linkable	Read-Write	Data Type
741	**Position Status** Indicates status of position control algorithms. • Bit 0 [X IGain LLim] indicates the position integrator is at the low limit. • Bit 1 [X IGain HLim] indicates the position integrator is at the high limit. • Bit 2 [X Spd LLim] indicates the position regulator output at the low limit. • Bit 3[X Spd HLim] indicates the position regulator output is at the high limit. • Bit 4 [PtPtRRef Act] (TBD) • Bit 5 [XOffRRef Act] (TBD) • Bit 7 [Regulator On] indicates position regulator is active. • Bit 8 [Posit Watch1] indicates Position Watch 1 has detected motor position equal to its setpoint, from the proper direction. • Bit 9 [Posit Watch2] indicates Position Watch 2 has detected motor position equal to its setpoint, from the proper direction. • Bit 10 [In Position] indicates Par 769 [Position Error] is within the position deadband specified by Par 782 [In Posit BW]. Note: Bits 13 - 15 were added for future use - not active for use with firmware version 3.01.						

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Homed	Homing	HomeRequired	Reserved	Posit Out En	In Position	Posit Watch2	Posit Watch1	Regulator On	Reserved	XOffRRef Act	PtPtRRef Act	X Spd HLim	X Spd LLim	X IGain HLim	X IGain LLim	
Default	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

No.	Name Description	Values			Linkable	Read-Write	Data Type
742	**Position Ref Sel** Enter a value to select the position mode and corresponding reference. Note: This parameter was changed to non-linkable for firmware version 3.01.	Default: Options:	1 = "AuxPosit Ref" 0 = "Interpolate" 2 = "Pt to Pt" 1 = "AuxPosit Ref"				
743	**Aux Posit Ref** Supplies position reference to the position regulator when selected by Par 742 [Posit Ref Sel] = 1. This input is designed to be linked to a position count accumulator such as a virtual encoder or hardware accumulator.	Default: Min/Max:	0 -/+2147483648		✓	RW	32-bit Integer
744	**PositRef EGR Out** Accumulated output of the position reference Electronic Gear Ratio (EGR). When the position regulator is not enabled, this parameter is initialized to Par 762 [Position Fdbk] or to the selected position reference as determined by Par 740 [Position Control] bit 6.	Default: Min/Max:	0 -/+2147483648			RO	32-bit Integer
745	**PositRef EGR Mul** An integer value in the numerator of the EGR function that is precision multiplied by the selected position reference. A negative value will effect a change in polarity.	Default: Min/Max:	1 -/+2000000		✓	RW	32-bit Integer

No.	Name Description	Values		Linkable	Read-Write	Data Type
746	**PositRef EGR Div** An integer value in the denominator of the Electronic Gear Ratio (EGR) function that divides into the product of the numerator and the selected position reference. Remainders are accumulated and not lost.	Default: Min/Max:	1 1/2000000	✓	RW	32-bit Integer
747	**Position Cmmd** Final accumulated command to the position regulator. When the position regulator is not enabled, this parameter is initialized to Par 762 [Position Fdbk] or to the selected position reference as determined by Par 740 [Position Control] bit 6. Thereafter, its value will reflect the result of reference and offset changes.	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
748	**CoarsePosit Trgt** Input to the interpolator. This is a course position target reference.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
749	**Interp Position** Input to the interpolator. This is a fine position target reference.	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
750	**Course Spd Trgt** Input to the interpolator. This is a course speed target reference.	Default: Min/Max:	0 -/+2200000000.0000	✓	RW	Real
751	**Interp Speed** Output from the interpolator. This is a fine speed target reference.	Default: Min/Max:	0 -/+8.0000 pu		RO	Real
752	**Interp AccelRate** Output from interpolator. This is a fine acceleration rate. First derivative of Par 750 [Course Spd Trgt] if available, or zero (0) if not available.	Default: Min/Max:	0 -/+8.0000 pu		RO	Real
753	**Posit Offset 1** Supplies a position reference offset, which is summed after the EGR and used to phase trim position reference. A step in the offset position will be internally rate limited and added to the selected reference position. The rate of correction is set by Par 755 [Posit Offset Spd]. The initial value of this parameter is latched upon position enable without causing a change in reference. Subsequent changes to this value will be relative to the latched value. See Par 740 [Position Control], bit 5 for re-referencing the offsets.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
754	**Posit Offset 2** Supplies another position reference offset, which is summed with Par 753 [Posit Offset 1]. Used to trim the phase of the selected position reference. Position offset will be internally rate limited to a velocity set by Par 755 [Posit Offset Spd].	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
755	**Posit Offset Spd** Sets the speed of position offset. A position offset command will not exceed this speed. The actual speed of offset is limited to a maximum value of 1/(inertia * pos gain) so as not to cause a torque pulse greater than 1 per unit. The speed will change exponentially.	Units: Default: Min/Max: Scale:	RPM 176.4000 -/+14112.0000 Par 4 [Motor NP RPM] = 1.0pu	✓	RW	Real
756	**X Offst SpdFilt** Displays the output of a first order filter whose time response is shaped specifically to provide an output that represents the actual speed of offset correction. It may be used as a feed forward into speed reference to secure minimal position error during changes to offset.	Units: Default: Min/Max: Scale:	RPM 0.0000 -/+14112.0000 Par 4 [Motor NP RPM] = 1.0pu		RO	Real
757	**Abs Posit Offset** Provides an offset to absolute position. Setting Par 740 [Position Control], bit 8 [Xzero Preset] presets Par 744 [PositRef EGR Out], Par 747 [Position Cmmd], Par 763 [Position Actual] and Par 765 [Posit Actl Load] with the value in Par 762 [Position Fdbk] minus Par 757 [Abs Posit Offset] upon drive enable.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
758	**Pt-Pt Posit Ref** Provides position reference to the point to point position regulator, when the value in Par 742 [Position Ref Sel] = 2 “Pt to Pt”. The initial value is latched upon position enable without causing movement. Subsequent changes to reference are relative to the latched position unless the position is re-referenced by Par 740 [Position Control], bit 10 [Pt-Pt ReRef]. Position moves may be made within the limits of plus or minus 31 bits. Point-to-point reference may be changed, and even reversed, during a move.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
759	**Pt-Pt Accel Time** Acceleration time (sec) to base speed, active only in point to point mode. Acceleration to a relatively low speed may be exponential.	Units: Default: Min/Max:	Sec 10.0000 0.1000/6553.5000	✓	RW	Real
760	**Pt-Pt Decel Time** Deceleration time (sec) from base speed to zero, active only in point to point mode. Some tailing can be expected at the end of a move as the drive comes into command position. It is left to the user to select a time that does not place the drive in current or torque limit. Deceleration from relatively low speed may be exponential.	Units: Default: Min/Max:	Sec 10.0000 0.1000/6553.5000	✓	RW	Real
761	**Pt-Pt Filt BW** Sets the bandwidth of a low pass filter which affects smoothness at the start of deceleration in the point to point mode. A high filter bandwidth will produce a more square deceleration torque, one with a higher level of jerk. Typical values range from 5 to 100 (rad/sec). A zero value will bypass the filter. Tail-out is influenced mainly by Par 768 [Posit Reg P Gain].	Units: Default: Min/Max:	R/S 25.0000 0.0000/500.0000	✓	RW	Real
762	**Position Fdbk** Displays the accumulated pulse count of the selected position feedback. Select a position feedback device with Par 777 [PositionFdbk Sel].	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer

No.	Name Description	Values		Linkable	Read-Write	Data Type
763	**Position Actual** Displays the accumulated motor position as a 32-bit integer. It tracks Par 762 [Position Fdbk]. When the position regulator is not enabled, this parameter is initialized to Par 762 [Position Fdbk] or to the selected position reference as determined by Par 740 [Position Control], bit 6 [AbsPositCtrl].	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
764	**Posit Load Fdbk** Tracks the load position, as a 32-bit integer. When a gear box connects the load to the motor, Par 766 [Posit FB EGR Mul] and Par 767 [Posit FB EGR Div] must be set to account for the gear ratio. Set Par 766 [Posit FB EGR Mul] equal to Par 767 [Posit FB EGR Div] if the load is directly connected to the motor.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
765	**Posit Actl Load** Holds the accumulated output of the Load Gear Ratio as a 32-bit integer and forms the primary feedback for the position regulator integral channel. It is very important that the load gear ratio be precisely set such that the delta pulse count of one motor revolution equals the delta pulse count of this parameter. When the position regulator is not enabled, this parameter is initialized to Par 762 [Position Fdbk] or to the selected position reference as determined by Par 740 [Position Control], bit 6 [AbsPositCtrl].	Default: Mi/Max:	0 -/+2147483648		RO	32-bit Integer
766	**Posit FB EGR Mul** A 32-bit integer in the numerator of the load EGR function. It is multiplied by Par 764 [Posit Load Fdbk] and divided by Par 767 [Posit FB EGR Div] to reflect the load pulse count to the motor (effectively removing the gear box ratio). The accumulated position values Par 763 [Position Actual] and Par 765 [Posit Actl Load] will be equal if the ratio is set properly. There may be some difference due to lost motion in the gear train, but there should not be an accumulated difference. It is often necessary to count gear teeth as gear box manufacturers often approximate exact ratios with decimal numbers. Enter a negative value in the numerator to account for reversed motor rotation.	Default: Min/Max:	1 -/+1000000	✓	RW	32-bit Integer
767	**Posit FB EGR Div** This is a 32-bit integer that forms the denominator of the load EGR function.	Default: Min/Max:	1 1/2000000		RW	32-bit Integer
768	**PositReg P Gain** Sets position regulator gain as measured from position error to speed reference. The gain number is identically equal to position regulator bandwidth in rad/sec. For example: A gain of 10 means that a per unit position error of 0.1 sec. will effect a 1.0 pu speed change (1 per unit position error is the distance traveled in 1 sec. at base motor speed). The maximum value of this parameter is typically 1/3 of the speed bandwidth (rad/sec) but may be set considerably higher with careful tuning of the speed regulator output lead/lag filter.	Units: Default: Min/Max:	R/S 4.0000 0.0000/200.0000	✓	RW	Real
769	**Position Error** Actual position error in motor pulse counts. When the position regulator is not enabled, this 32-bit integer register is initialized to zero. When the position regulator is enabled, this parameter contains the running value of position error, often referred to as “following error”.	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
770	**PositReg Integ** Sets position regulator integral gain as measured from position error to velocity reference. It has gain units of (per unit velocity/sec) / (per unit position) and is unit compatible with Par 768 [PositReg P Gain]. An integral gain of 25 means that a per unit position error of 0.1 sec will effect a 2.5 pu speed change per sec. A typical maximum value is _*[PositReg P Gain]2. Note: 1 per unit position is the distance traveled in 1 sec. at base motor speed.	Units: Default: Min/Max:	/S2 4.0000 0.0000/1000.0000	✓	RW	Real
771	**PositReg Droop** Position Droop limits the low frequency gain of the position regulators integral channel to a value of (1/droop). It provides a means to fine tune the stability for load mounted feedback devices where lost motion may cause a problem. Typically, position droop will have a value that is less than (1/position gain), perhaps even zero for tightly coupled loads. Position droop has a gain value of (per unit position) / (per unit speed). Note: 1 per unit position is the distance traveled in 1 sec. at base motor speed.	Default: Min/Max:	0.0000 0.0000/0.2500	✓	RW	Real
772	**XReg Integ LoLim** The negative limit of the position integrator.	Units: Default: Min/Max: Scale:	RPM -176.4000 -14112.0000/0.0000 Par 4 [Motor NP RPM] = 1.0pu	✓	RW	Real
773	**XReg Integ HiLim** The positive limit of the position integrator.	Units: Default: Min/Max: Scale:	RPM 176.4000 0.0000/14112.0000 Par 4 [Motor NP RPM] = 1.0pu	✓	RW	Real
774	**XReg Integ Out** The output of the position regulator integral channel after application of the limits. This output is set to zero if the integral gain is set to zero or the integrator is not enabled.	Units: Default: Min/Max: Scale:	RPM 0 -/+14112.0000 Par 4 [Motor NP RPM] = 1.0pu		RO	Real
775	**XReg Spd LoLim** The negative limit of total position regulator output. Point to point mode uses this parameter to set the reverse speed reference.	Units: Default: Min/Max: Scale:	RPM -176.4000 -14112.0000/0.0000 Par 4 [Motor NP RPM] = 1.0pu	✓	RW	Real

No.	Name Description	Values		Linkable	Read-Write	Data Type
776	**XReg Spd HiLim** The positive limit of total position regulator output. Point to point mode uses this parameter to set the forward speed reference.	Units: Default: Min/Max: Scale:	RPM 176.4000 0.0000/14112.0000 Par 4 [Motor NP RPM] = 1.0pu	✓	RW	Real
777	**PositionFdbk Sel** Enter a value to select the position control feedback device. The feedback device used for position control may be an independent selection from the motor speed control feedback device in Par 222 [Mtr Fdbk Sel Pri] or Par 223 [Mtr Fdbk Alt Sel]. If the position feedback is to be the same as the motor feedback, select option 3 "Motor Fdbk". This option will set the selected feedback of Par 222 [Motor Fdbk Sel Pri] or Par 223 [Mtr Fdbk Sel Alt] as the position regulators position feedback. Notes: Options 5 and 6 are only available when compatible feedback option card is installed. This parameter was changed to non-linkable for firmware version 3.01.	Default: Options:	0 = "Encoder 0" 0 = "Encoder 0" 1 = "Encoder 1" 2 = "Reserved" 3 = "Mtr Fdbk Pri" 4 = "Motor Sim" 5 = "FB Opt Port0" 6 = "FB Opt Port1" 7 = "SL DirIntRx0" 8 = "SL DirIntRx1" 9 = "SL DirIntRx2" 10 = "SL DirIntRx3"			
778	**X Notch Attenu** Sets the depth for the Position Notch Filter. Attenuation is the ratio of the output to the input at the notch frequency. An attenuation of 30 means that the notch output is 1/30th of the input at the specified frequency. Calculation: Attenuation = Input / Output  	Default: Min/Max:	50 0/500	✓	RW	Real
779	**X Notch FiltFreq** Sets the center frequency of the Position Notch Filter.	Units: Default: Min/Max:	Hz 0.0 0.0/500.0	✓	RW	Real
780	**PositDetct1 Stpt** Provides the set point for Position Watch 1. Position Watch 1 is enabled and configured with Par 740 [Position Control] bits 16 & 17. Position Watch 1 compares this value with Par 784 [Posit Dect1 In] and sets bit 8 [Posit Watch1] of Par 741 [Position Status] when the appropriate condition is satisfied.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
781	**PositDetct2 Stpt** Provides the set point for Position Watch 2. Position Watch 2 is enabled and configured with Par 740 [Position Control] bits 18 & 19. Position Watch 2 compares this value with Par 785 [Posit Dect2 In] and sets bit 9 [Posit Watch2] of Par 741 [Position Status] when the appropriate condition is satisfied.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
782	**In Posit BW** Sets the overall bandwidth of the In Position detector. The detector sets bit 10 [In Position] of Par 741 [Position Status], when Par 769 [Position Error] is within this bandwidth for a sufficient time, specified by Par 783 [In Posit Dwell]. A modest hysteresis count is added to the position bandwidth after the position error is within specified limits.	Default: Min/Max:	200 0/1000000	✓	RW	32-bit Integer
783	**In Posit Dwell** Position error must be within the value specified by Par 782 [In Posit BW] for this amount of time before the In Position detector sets bit 10 [In Position] of Par 741 [Position Status]. A momentary out-of-position indication will reset the internal timer and clear the In Position status bit.	Units: Default: Min/Max:	Sec 0.0040 0.0000/10.0000	✓	RW	Real
784	**Posit Dect1 In** Provides the input variable for Position Watch 1. Position Watch 1 is enabled and configured with Par 740 [Position Control] bits 16 & 17. Position Watch 1 compares this value with Par 780 [PositDetct1 Stpt] and sets bit 8 [Posit Watch1] of Par 741 [Position Status] when the appropriate condition is satisfied. A default link connects this parameter to Par 763 [Position Actual].	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
785	**Posit Dect2 In** Provides the input variable for Position Watch 2. Position Watch 2 is enabled and configured with Par 740 [Position Control] bits 18 & 19. Position Watch 2 compares this value with Par 781 [PositDetct2 Stpt] and sets bit 9 [Posit Watch2] of Par 741 [Position Status] when the appropriate condition is satisfied. A default link connects this parameter to Par 763 [Position Actual].	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer

No.	Name Description	Values	Linkable	Read-Write	Data Type
786	**Xsync Status** Bit 0 [Sync Pulse] will go high for 0.5ms latching the Sync Generator inputs to the Sync Generator outputs. The period at which this bit is set is determined by Par 787 [Xsync Gen Period]. Note: Bit 1 was changed to [Reserved] for firmware version 2.04.				

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Sync Unstbl	Sync Loss	InterpInSync	Reserved	Sync Pulse
Default	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

787	**Xsync Gen Period** Sets the period for the Sync Pulse Generator. Bit 0 of Par 786 [Xsync Status] will be set for 0.5 msec and will be cleared for 0.5msec * 2[Xsync Gen Period] - 0.5 msec. Note: Values 5 - "16 msec" and 6 - "32 msec" were added for firmware version 2.04.	Default: Options:	1 = "1 msec" 0 = "0.5 msec" 1 = "1 msec" 2 = "2 msec" 3 = "4 msec" 4 = "8 msec" 5 = "16 msec" 6 = "32 msec"		
788	**Xsync In 1** 32-bit integer input of the Sync Generator. Latched to Par 789 [Xsync Out 1]. Link any 32-bit integer parameter to this input parameter.	Default: Min/Max:	0 -/+2147483648	✓ RW	32-bit Integer
789	**Xsync Out 1** Sync Generator 32-bit output register. Latched to Par 788 [Xsync In 1] every time bit 0 [Sync Pulse] of Par 786 [Xsync Status] is set.	Default: Min/Max:	0 -/+2147483648	RO	32-bit Integer
790	**Xsync In 2** 32-bit integer input of the Sync Generator. Latched to Par 791 [Xsync Out 2]. Link any 32-bit integer parameter to this input parameter.	Units: Default: Min/Max:	 0 -/+2147483648	✓ RW	32-bit Integer
791	**Xsync Out 2** Sync Generator 32-bit output register. Latched to Par 790 [Xsync In 2] every time bit 0 [Sync Pulse] of Par 786 [Xsync Status] is set.	Default: Min/Max:	0 -/+2147483648	RO	32-bit Integer
792	**Xsync Out 2 Dly** Displays data of Par 791 [Xsync Out 2] from the last sync period.	Default: Min/Max:	0 -/+2147483648	RO	32-bit Integer
793	**Xsync In 3** 32-bit integer input of the Sync Generator. Latched to Par 794 [Xsync Out 3]. Link any 32-bit integer parameter to this input parameter.	Units: Default: Min/Max:	P.U. 0.0000 -/+214748.3594	✓ RW	32-bit Integer
794	**Xsync Out 3** Sync Generator 32-bit output register. Latched to Par 793 [Xsync In 3] every time bit 0 [Sync Pulse] of Par 786 [Xsync Status] is set.	Units: Default: Min/Max:	P.U. 0.0000 -/+214748.3594	RO	Real
795	**Xsync Out 3 Dly** Displays data of Par 794 [Xsync Out 3] from the last sync period.	Units: Default: Min/Max:	P.U. 0 -/+214748.3594	RO	Real
796	**Posit Gear Ratio** Sets the load side gear ratio for position control. Adjust this value when the selection of Par 777 [PositionFdbk Sel] is not 3 "Motor Fdbk". Calculation: Motor Encoder (Rpm) / Load Encoder (Rpm) Note: This parameter was changed to non-linkable for firmware version 3.01.	Default: Min/Max:	1.00 0.00/9999.00	RW	Real
797	**BasicIndx Step** Sets the amount added to or subtracted from Par 799 [BasicIndx Output] on a rising edge of Par 740 [Position Control], bit 12 [BscIndx Step]. Note that this value can be positive or negative.	Default: Min/Max:	0 -/+2147483648	✓ RW	32-bit Integer
798	**BasicIndx Preset** Sets the value to be moved into Par 799 [BasicIndx Output] when Par 740 [Position Control], bit 11 [BscIndx Enbl] and bit 14 [BscIndx Prst] are both on.	Default: Min/Max:	0 -/+2147483648	✓ RW	32-bit Integer
799	**BasicIndx Output** Displays the output of the Position Index function.	Default: Min/Max:	0 -/+2147483648	RO	32-bit Integer
800	**Anlg In1 Data** Displays the scaled final value for Analog Input 1.	Default: Min/Max:	0.0000 -/+2200000000.0000	RO	Real

No.	Name Description	Values		Linkable	Read-Write	Data Type
801	**Anlg In1 Value** Displays the actual input value at Analog Input 1. Analog Input 1 may be configured for voltage or current input signal. For proper selection of the input signal, the DIP switch and Par 821 [Analog I/O Units] must be set to match. Type of Input: Configurable, Voltage or Current Polarity: Bi-Polar Resolution: 14 bit (-8191 to +8191) AI 1 Voltage: DIP Switch S5-2 = Open; Analog I/O Units Par 821 Bit 0 = 0 (False) AI 1 Current: DIP Switch S5-2 = Closed; Analog I/O Units Par 821 Bit 0 = 1 (True)	Units: Default: Min/Max:	V/mA 0V/4 mA -/+20.0000		RO	Real
802	**Anlg In1 Scale** Scales the range of Analog Input 1 to the range of Par 800 [Anlg In1 Data]. Par 801 [Anlg In1 Value] is multiplied by this number to produce the input to the lead lag filter function. Par 802 [Anlg In1 Scale] = 1 and Par 800 [Anlg In1 Data] = 10 when 10V is applied.	Units: Default: Min/Max:	/1v 0.0000 -/+2200000000.0000	✓	RW	Real
803	**Anlg In1 Offset** Applies an offset to Analog Input 1. Use the offset to correct for zero signal errors or to create an offset to the actual input. The output of the A/D converter is summed with this parameter to produce Par 801 [Anlg In1 Value].	Units: Default: Min/Max:	Volt 0.0000 -/+20.0000	✓	RW	Real
804	**AI 1 Filt Gain** Provides the Lead term for the Analog Input 1 filter.	Default: Min/Max:	1.0000 -/+5.0000	✓	RW	Real
805	**Anlg In1 Filt BW** Provides the Lag term for the Analog Input 1 filter. Par 804 [AI 1 Filt Gain]: Light 0.25; Heavy 0.1 Par 805 [Anlg In1 Filt BW]: Light 50; Heavy 10	Units: Default: Min/Max:	R/S 0.0000 0.0000/3760.0000l	✓	RW	Real
806	**Anlg In2 Data** Displays the scaled final value for Analog Input 2.	Default: Min/Max:	0.0000 -/+2200000000.0000		RO	Real
807	**Anlg In2 Value** Displays the actual input value at Analog Input 2. Analog Input 2 may be configured for voltage or current input signal. For proper selection of the input signal, the DIP switch and Par 821 [Analog I/O Units] must be set to match. Type of Input: Configurable, Voltage or Current Polarity: Bi-Polar Resolution: 14 bit (-8191 to +8191) AI 2 Voltage: DIP Switch S5-1 = Open; Analog I/O Units Par 821 Bit 1 = 0 (False) AI 2 Current: DIP Switch S5-1 = Closed; Analog I/O Units Par 821 Bit 1 = 1 (True)	Units: Default: Min/Max:	V/mA 0V/4 mA -/+20.0000		RO	Real
808	**Anlg In2 Scale** Scales the range of Analog Input 2 to the range of Par 806 [Anlg In2 Data]. Par 807 [Anlg In2 Value] is multiplied by this number to produce the input to the lead lag filter function.	Units: Default: Min/Max:	/1v 0.0000 -/+2200000000.0000	✓	RW	Real
809	**Anlg In2 Offset** Applies an offset to Analog Input 2. Use the offset to correct for zero signal errors or to create an offset to the actual input. The output of the A/D converter is summed with this parameter to produce Par 807 [Anlg In2 Value].	Units: Default: Min/Max:	Volt 0.0000 -/+20.0000	✓	RW	Real
810	**AI 2 Filt Gain** Provides the Lead term for the Analog Input 2 filter.	Default: Min/Max:	1.0000 -/+5.0000	✓	RW	Real
811	**Anlg In2 Filt BW** Sets the frequency for the Analog Input 2 filter. Par 810 [AI 2 Filt Gain: Light 0.25; Heavy 0.1 Par 811 [Anlg In2 Filt BW]: Light 50; Heavy 10	Units: Default: Min/Max:	R/S 0.0000 0.0000/3760.0000	✓	RW	Real
812	**Anlg In3 Data** Displays the scaled final value for Analog Input 3.	Default: Min/Max:	0.0000 -/+2200000000.0000		RO	Real

No.	Name Description	Values	Linkable	Read-Write	Data Type
813	**Anlg In3 Value** Displays the actual input value at Analog Input 3. Analog Input 3 is a uni-polar voltage input only and cannot be configured for current. Type of Input = Voltage Polarity = Uni-Polar Resolution = 10 bit (0 to +1023)	Units: Volts Default: 0.0 Min/Max: 0.0/10.0		RO	Real
814	**Anlg In3 Scale** Scales the raw analog input data plus the input offset to the desired data range. The scaled data for Analog Input 3 is displayed in Par 812 [Anlg In3 Data] and is available for usage in the drive.	Units: /1v Default: 0.0000 Min/Max: -/+2200000000.0000	✓	RW	Real
815	**Anlg In3 Offset** Applies an offset to Analog Input 3. Use the offset to correct for zero signal errors or to create an offset to the actual input. The output of the A/D converter is summed with this parameter to produce Par 813 [Anlg In3 Value].	Units: Volts Default: 0.0 Min/Max: -/+20.0	✓	RW	Real
816	**AI 3 Filt Gain** Provides the Lead term for the Analog Input 3 filter.	Default: 1.0 Min/Max: -/+5.0	✓	RW	Real
817	**Anlg In3 Filt BW** Provides the Lag term for the Analog Input 3 filter. Par 816 [AI 3 Filt Gain: Light 0.25, Heavy 0.1 Par 817 [Anlg In3 Filt BW]: Light 50, Heavy 10	Units: R/S Default: 0.0000 Min/Max: 0.0000/3760.0000	✓	RW	Real

821 **Analog I/O Units**

Use to configure the type of units for the analog I/O. For analog inputs, configure bits 0 & 1 to match the selection with hardware switch S5. Bit 2 [AI3 Thermstr] configures analog input 3 for a thermistor input with range of 0 to 3V. Bits 16 &17 are used to configure the analog outputs for current or voltage. No hardware configuration is needed for the analog outputs.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	AO2 Current	AO1 Current	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	AI3 Thermstr	AI2 Current	AI1 Current
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

823 **DigIn Debounce**

Sets the amount of de-bounce (filtering) for each digital input. This is used to remove unwanted on/off cycling (chatter) on the digital inputs caused by relay bounce. Each digital input de-bounce is configured separately from 0.5ms to 8.0ms. The bit selections are cumulative for each digital input (1 - 6).
Example: bit 4 & 2 & 1 on = 5.5ms of de-bounce for digital input 1.

Options	Reserved	DI6 8.0ms	DI6 4.0ms	DI6 2.0ms	DI6 1.0ms	DI6 0.5ms	DI5 8.0ms	DI5 4.0ms	DI5 2.0ms	DI5 1.0ms	DI5 0.5ms	DI4 8.0ms	DI4 4.0ms	DI4 2.0ms	DI4 1.0ms	DI4 0.5ms	DI3 8.0ms	DI3 4.0ms	DI3 2.0ms	DI3 1.0ms	DI3 0.5ms	DI2 8.0ms	DI2 4.0ms	DI2 2.0ms	DI2 1.0ms	DI2 0.5ms	DI1 8.0ms	DI1 4.0ms	DI1 2.0ms	DI1 1.0ms	DI1 0.5ms	Reserved
Default	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

824 **Local I/O Status**

Displays the status of the local I/O.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Relay Out 3	DigOut 2	DigOut 1	SafeOffInput	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	DigIn 6	DigIn 5	DigIn 4	DigIn 3	DigIn 2	DigIn 1	Hw Enbl Byps
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

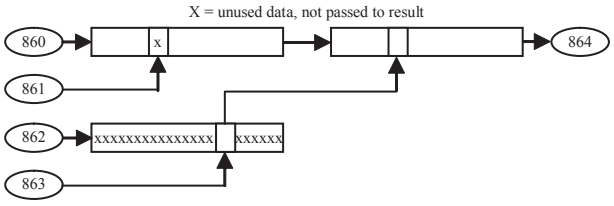
0 = False
1 = True

No.	Name Description	Values		Linkable	Read-Write	Data Type
825	**Dig In1 Sel** Enter a value to select the function of digital input 1. **Note:** For all Stop Function: Low = Stop, High = Ok to Run, In "Norm Stop-CF" Low = Normal Stop and Clear Fault. Notes: Option 38 “ExtFault Inv” was added for firmware version 2.04. Option 39 “Home Switch” was added for firmware version 3.01.	Default: Options:	0 = “Reserved” 0 = “Reserved” 1 = “Enable” 2 = “Clear Faults” 3 = “Ext Fault” 4 = “Norm Stop-CF” 5 = “Start” 6 = “Reverse” 7 = “Run” 8 = “Reserved” 9 = “Reserved” 10 = “Jog 1” 11 = “Reserved” 12 = “Reserved” 13 = “Jog 2” 14 = “Normal Stop” 15 = “Spd Ref Sel0” 16 = “Spd Ref Sel1” 17 = “Spd Ref Sel2” 18 = “CurLim Stop” 19 = “Coast Stop” 20 = “Accel Decel2” 21 = “Indx Step” 22 = “Indx StepRev” 23 = “MOP Inc” 24 = “MOP Dec” 25 = “MOP Reset” 26 = “PI Trim En” 27 = “PI Trim Hold” 28 = “PI Trim Rst” 29 = “Trend Trig” 30 = “PreCharge En” 31 = “Regis 1 Ltch” 32 = “+Hrd OvrTrvl” 33 = “-Hrd OvrTrvl” 34 = “UserGen Sel0” 35 = “UserGen Sel1” 36 = “UserGen Sel2” 37 = “UserGen Sel3” 38 = “ExtFault Inv” 39 = “Home Switch”			
826	**Dig In2 Sel** Enter a value to select the function of digital input 2. **Note:** For all Stop Function: Low = Stop, High = Ok to Run, In "Norm Stop-CF" Low = Normal Stop and Clear Fault. Notes: Option 38 “ExtFault Inv” was added for firmware version 2.04. Option 39 “Home Switch” was added for firmware version 3.01.	Default: Options:	0 = “Reserved” 0 = “Reserved” 1 = “Enable” 2 = “Clear Faults” 3 = “Ext Fault” 4 = “Norm Stop-CF” 5 = “Start” 6 = “Reverse” 7 = “Run” 8 = “Reserved” 9 = “Reserved” 10 = “Jog 1” 11 = “Reserved” 12 = “Reserved” 13 = “Jog 2” 14 = “Normal Stop” 15 = “Spd Ref Sel0” 16 = “Spd Ref Sel1” 17 = “Spd Ref Sel2” 18 = “CurLim Stop” 19 = “Coast Stop” 20 = “Accel Decel2” 21 = “Indx Step” 22 = “Indx StepRev” 23 = “MOP Inc” 24 = “MOP Dec” 25 = “MOP Reset” 26 = “PI Trim En” 27 = “PI Trim Hold” 28 = “PI Trim Rst” 29 = “Trend Trig” 30 = “PreCharge En” 31 = “Regis 2 Ltch” 32 = “+Hrd OvrTrvl” 33 = “-Hrd OvrTrvl” 34 = “UserGen Sel0” 35 = “UserGen Sel1” 36 = “UserGen Sel2” 37 = “UserGen Sel3” 38 = “ExtFault Inv” 39 = “Home Switch”			
827 828 829 830	**Dig In3 Sel** Enter a value to select the function of digital input 3. **Dig In4 Sel** Enter a value to select the function of digital input 4. **Dig In5 Sel** Enter a value to select the function of digital input 5. **Dig In6 Sel** Enter a value to select the function of digital input 6. **Note:** For all Stop Function: Low = Stop, High = Ok to Run, In "Norm Stop-CF" Low = Normal Stop and Clear Fault. Notes: Option 38 “ExtFault Inv” was added for firmware version 2.04. Option 39 “Home Switch” was added for firmware version 3.01. (1) Opening an “Enable” input will cause the motor to coast-to-stop, ignoring any programmed Stop modes.	Default: Options:	0 = “Reserved” 0 = “Reserved” 1 = “Enable”(1) 2 = “Clear Faults” 3 = “Ext Fault” 4 = “Norm Stop-CF” 5 = “Start” 6 = “Reverse” 7 = “Run” 8 = “Reserved” 9 = “Reserved” 10 = “Jog 1” 11 = “Reserved” 12 = “Reserved” 13 = “Jog 2” 14 = “Normal Stop” 15 = “Spd Ref Sel0” 16 = “Spd Ref Sel1” 17 = “Spd Ref Sel2” 18 = “CurLim Stop” 19 = “Coast Stop” 20 = “Accel Decel2” 21 = “Indx Step” 22 = “Indx StepRev” 23 = “MOP Inc” 24 = “MOP Dec” 25 = “MOP Reset” 26 = “PI Trim En” 27 = “PI Trim Hold” 28 = “PI Trim Rst” 29 = “Trend Trig” 30 = “PreCharge En” 31 = “Reserved” 32 = “+Hrd OvrTrvl” 33 = “-Hrd OvrTrvl” 34 = “UserGen Sel0” 35 = “UserGen Sel1” 36 = “UserGen Sel2” 37 = “UserGen Sel3” 38 = “ExtFault Inv” 39 = “Home Switch”			

No.	Name Description	Values		Linkable	Read-Write	Data Type
831	**Anlg Out1 Sel** Use to select the signal for use on Analog Output 1. If the desired signal is not available in the selection list, choose option 0 - "User Select" and link with Par 832 [Anlg Out1 DInt] or Par 833 [Anlg Out1 Real] to select the desired parameter for output.	Default: Options:	17 = "Speed Fdbk" 0 = "User Select" 1 = "Output Freq" 2 = "Sel Spd Ref" 3 = "Output Curr" 4 = "Trq Cur (Iq)" 5 = "% Motor Flux" 6 = "Output Power" 7 = "Output Volts" 8 = "DC Bus Volts" 9 = "PI Reference" 10 = "PI Feedback" 11 = "PI Error" 12 = "PI Output" 13 = "Reserved" 14 = "Reserved" 15 = "Motor TrqRef" 16 = "MtrTrqCurRef" 17 = "Speed Ref" 18 = "Speed Fdbk" 19 = "Torque Est" 20 = "Scl Spd Fdbk" 21 = "RampedSpdRef" 22 = "Spd Reg Out" 23 = "MOP Level" 24 = "Trend 1 DInt" 25 = "Trend 1 Real" 26 = "Trend 2 DInt" 27 = "Trend 2 Real"			
832	**Anlg Out1 DInt** Link this parameter to an integer source parameter that will control Analog Output 1.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
833	**Anlg Out1 Real** Link this parameter to a real (floating point) source parameter that will control Analog Output 1.	Default: Min/Max:	0.0000 -/+2200000000.0000.0000	✓	RW	Real
834	**Anlg Out1 Offset** Provides an offset for Analog Output 1 before the scaling and limit blocks in the Analog Output 1 function. This parameter value is summed with either Par 832 [Anlg Out1 DInt] or Par 833 [Anlg Out1 Real] at the beginning of the function.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
835	**Anlg Out1 Scale** Scales the range of the source parameter to the range of Analog Output 1. Par 832 [Anlg Out1 DInt] or Par 833 [Anlg Out1 Real] is multiplied by this number after the limit function.	Units: Default: Min/Max:	/1v 0.0000 -/+2200000000.0000	✓	RW	Real
836	**Anlg Out1 Zero** Applies an offset to the scaled value of Analog Output 1. This parameter is summed with the output of the scaling block. This sum produces Par 837 [Anlg Out1 Value]. Typically this value corresponds to 0V for Analog Output 1.	Units: Default: Min/Max:	Volt 0.0000 -/+20.0000	✓	RW	Real
837	**Anlg Out1 Value** Displays the voltage reference for Analog Output 1 before the digital to analog conversion.	Units: Default: Min/Max:	Volt 0.0000 -/+10.0000		RO	Real
838	**Anlg Out2 Sel** Use to select the signal for use on Analog Output 2. If the desired signal is not available in the selection list, choose option 0 - "User Select" and link with Par 839 [Anlg Out2 DInt] or Par 840 [Anlg Out2 Real] to select the desired parameter for output.	Default: Options:	3 = "Output Curr" 0 = "User Select" 1 = "Output Freq" 2 = "Sel Spd Ref" 3 = "Output Curr" 4 = "Trq Cur (Iq)" 5 = "% Motor Flux" 6 = "Output Power" 7 = "Output Volts" 8 = "DC Bus Volts" 9 = "PI Reference" 10 = "PI Feedback" 11 = "PI Error" 12 = "PI Output" 13 = "Reserved" 14 = "Reserved" 15 = "Motor TrqRef" 16 = "MtrTrqCurRef" 17 = "Speed Ref" 18 = "Speed Fdbk" 19 = "Torque Est" 20 = "Scl Spd Fdbk" 21 = "RampedSpdRef" 22 = "Spd Reg Out" 23 = "MOP Level" 24 = "Trend 1 DInt" 25 = "Trend 1 Real" 26 = "Trend 2 DInt" 27 = "Trend 2 Real"			
839	**Anlg Out2 DInt** Link this parameter to an integer source parameter that will control Analog Output 2.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
840	**Anlg Out2 Real** Link this parameter to a real (floating point) source parameter that will control Analog Output 2.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
841	**Anlg Out2 Offset** Provides an offset for Analog Output 2 before the scaling and limit blocks in the Analog Output 2 function. This parameter value is summed with either Par 839 [Anlg Out2 DInt] or Par 840 [Anlg Out2 Real] at the beginning of the function.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
842	**Anlg Out2 Scale** Scales the range of the source parameter to the range of Analog Output 2. Par 839 [Anlg Out2 DInt] or Par 840 [Anlg Out2 Real] is multiplied by this number after the limit function.	Units: Default: Min/Max:	/1v 0.0000 -/+2200000000.0000	✓	RW	Real
843	**Anlg Out2 Zero** Applies an offset to the scaled value of Analog Output 2. This parameter is summed with the output of the scaling block. This sum produces Par 844 [Anlg Out2 Value]. Typically this value corresponds to 0V for Analog Output 2.	Units: Default: Min/Max:	Volt 0.0000 -/+20.0000	✓	RW	Real
844	**Anlg Out2 Value** Displays the voltage reference for Analog Output 2 before the digital to analog conversion.	Units: Default: Min/Max:	Volt 0.0000 -/+10.0000		RO	Real

No.	Name Description	Values		Linkable	Read-Write	Data Type
845	**Dig Out1 Sel** Use to select the signal for use on Digital Output 1. If the desired signal is not available in the selection list, choose option 0 - "User Select" and link with Par 846 [Dig Out1 Data] and Par 847 [Dig Out1 Bit] to select the desired parameter and bit for output.	Default: Options:	3 = "Ready" 0 = "User Select" 1 = "Not Fault" 2 = "Not Alarm" 3 = "Ready" 4 = "Running" 5 = "Reserved" 6 = "Reserved" 7 = "Enable On" 8 = "Active" 9 = "At Speed" 10 = "At Setpt 1" 11 = "Above Setpt 2" 12 = "At ZeroSpeed" 13 = "Speed Limit" 14 = "CurrentLimit" 15 = "Torque Limit" 16 = "Power Limit" 17 = "Fault" 18 = "Alarm" 19 = "Command Dir" 20 = "Actual Dir" 21 = "Jogging" 22 = "In Position" 23 = "Posit Watch1" 24 = "Posit Watch2" 25 = "Cmpr 1 A</=B" 26 = "Cmpr 1 A>/=B" 27 = "Cmpr 2 A</=B" 28 = "Cmpr 2 A>/=B"			
846	**Dig Out1 Data** Link a word to this parameter that will control Digital Output 1. The bit within the selected word that will control Digital Output 1 is set by Par 847 [Dig Out1 Bit].	Default: Min: Max:	00000000000000000000000000000000 00000000000000000000000000000000 11111111111111111111111111111111	✓	RW	32-bit Boolean
847	**Dig Out1 Bit** Selects the bit, from the word linked to Par 846 [Dig Out1 Data], that will change the status of Digital Output 1 (e.g., when Par 847 [Dig Out1 Bit] equals 0, bit 0 of Par 846 [Dig Out1 Data] will control Digital Output 1).	Default: Min/Max:	0 -32/31	✓	RW	16-bit Integer
848	**Dig Out1 On Time** Defines the amount of time between a False to True transition on the output status and the corresponding change in state of Digital Output 1. If a transition on an output condition occurs and starts the time delay and the output condition returns to its original state before the delay timer reaches the setpoint, the delay timer will be aborted and the corresponding output status or digital output will not change state. Par 848 [Dig Out1 On Time] can be disabled by setting the delay time to 0 (zero). Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	Sec 0.00 0.00/600.00		RW	16-bit Integer
849	**Dig Out1 OffTime** Defines the amount of time between a True to False transition on the output status and the corresponding change in state of Digital Output 1. If a transition on an output condition occurs and starts the time delay and the output condition returns to its original state before the delay timer reaches the setpoint, the delay timer will be aborted and the corresponding output status or digital output will not change state. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	Sec 0.00 0.00/600.00		RW	16-bit Integer
850	**Dig Out2 Sel** Use to select the signal for use on Digital Output 2. If the desired signal is not available in the selection list, choose option 0 - "User Select" and link with Par 851 [Dig Out 2 Data] and Par 852 [Dig Out2 Bit] to select the desired parameter and bit for output.	Default: Options:	8 = "Active" 0 = "User Select" 1 = "Not Fault" 2 = "Not Alarm" 3 = "Ready" 4 = "Running" 5 = "Reserved" 6 = "Reserved" 7 = "Enable On" 8 = "Active" 9 = "At Speed" 10 = "At Setpt 1" 11 = "Above Setpt 2" 12 = "At ZeroSpeed" 13 = "Speed Limit" 14 = "CurrentLimit" 15 = "Torque Limit" 16 = "Power Limit" 17 = "Fault" 18 = "Alarm" 19 = "Command Dir" 20 = "Actual Dir" 21 = "Jogging" 22 = "In Position" 23 = "Posit Watch1" 24 = "Posit Watch2" 25 = "Cmpr 1 A</=B" 26 = "Cmpr 1 A>/=B" 27 = "Cmpr 2 A</=B 28 = "Cmpr 2 A>/=B			
851	**Dig Out2 Data** Link a word to this parameter that will control Digital Output 2. The bit within the selected word that will control Digital Output 2 is set by Par 852 [Dig Out2 Bit].	Default: Min: Max:	00000000000000000000000000000000 00000000000000000000000000000000 11111111111111111111111111111111	✓	RW	32-bit Boolean
852	**Dig Out 2 Bit** Selects the bit, from the word linked to Par 851 [Dig Out 2 Data], that will change the status of Digital Output 2 (e.g., when Par 852 [Dig Out 2 Bit] equals 0, bit 0 of Par 851 [Dig Out 2 Data] will control Digital Output 2).	Default: Min/Max:	0 -32/31	✓	RW	16-bit Integer
853	**Dig Out2 On Time** Defines the amount of time between a False to True transition on the output status and the corresponding change in state of Digital Output 2. If a transition on an output condition occurs and starts the time delay and the output condition returns to its original state before the delay timer reaches the setpoint, the delay timer will be aborted and the corresponding output status or digital output will not change state. Par 853 [Dig Out2 On Time] can be disabled by setting the delay time to 0 (zero). Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	Sec 0.00 0.00/600.00		RW	16-bit Integer

No.	Name Description	Values		Linkable	Read-Write	Data Type
854	**Dig Out2 OffTime** Defines the amount of time between a True to False transition on the output status and the corresponding change in state of Digital Output 2. If a transition on an output condition occurs and starts the time delay and the output condition returns to its original state before the delay timer reaches the setpoint, the delay timer will be aborted and the corresponding output status or digital output will not change state. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	Sec 0.0 0.0/600.00		RW	16-bit Integer
855	**Rly Out3 Sel** Use to select the signal for use on Digital Output 3. If the desired signal is not available in the selection list, choose option 0 - "User Select" and link with Par 856 [Rly Out3 Data] and Par 857 [Rly Out3 Bit] to select the desired parameter for output.	Default: Options:	1 = "Not Fault" 0 = "User Select" 1 = "Not Fault" 2 = "Not Alarm" 3 = "Ready" 4 = "Running" 5 = "Reserved" 6 = "Reserved" 7 = "Enable On" 8 = "Active" 9 = "At Speed" 10 = "At Setpt 1" 11 = "Above Setpt 2" 12 = "At ZeroSpeed" 13 = "Speed Limit" 14 = "CurrentLimit" 15 = "Torque Limit" 16 = "Power Limit" 17 = "Fault" 18 = "Alarm" 19 = "Command Dir" 20 = "Actual Dir" 21 = "Jogging" 22 = "In Position" 23 = "Posit Watch1" 24 = "Posit Watch2" 25 = "Cmpr 1 A</=B" 26 = "Cmpr 1 A>/=B" 27 = "Cmpr 2 A</=B 28 = "Cmpr 2 A>/=B			
856	**Rly Out3 Data** Link a word to this parameter that will control the Relay Output 3. The bit within the selected word that will control Relay Output 3 is set by Par 857 [Rly Out3 Bit].	Default: Min: Max:	00000000000000000000000000000000 00000000000000000000000000000000 11111111111111111111111111111111	✓	RW	32-bit Boolean
857	**Rly Out3 Bit** Selects the bit, from the word linked to Par 856 [Rly Out3 Data] that will change the status of the Relay Output 3 (e.g., when Par 857 [Rly Out3 Bit] equals 0, bit 0 of Par 856 [Rly Out3 Data] will control the Relay Output 3).	Default: Min/Max:	0 -32/31	✓	RW	16-bit Integer
858	**Rly Out3 On Time** Defines the amount of time between a False to True transition on the output status and the corresponding change in state of Relay Output 3. If a transition on an output condition occurs and starts the time delay and the output condition returns to its original state before the delay timer reaches the setpoint, the delay timer will be aborted and the corresponding output status or relay output will not change state. Par 858 [Rly Out3 On Time] can be disabled by setting the delay time to 0 (zero). Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	Sec 0.00 0.00/600.00		RW	16-bit Integer
859	**Rly Out3 OffTime** Defines the amount of time between a True to False transition on the output status and the corresponding change in state of Relay Output 3. If a transition on an output condition occurs and starts the time delay and the output condition returns to its original state before the delay timer reaches the setpoint, the delay timer will be aborted and the corresponding output status or relay output will not change state. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	Sec 0.00 0.00/600.00		RW	16-bit Integer

No.	Name Description	Values		Linkable	Read-Write	Data Type
	General BitSwap Description The six (6) Bit Swap functions are used to replace one bit in a word with one bit from a different word. This is typically done to a control word where one bit in the control word is replaced by a bit from another word such as a digital input. Four (4) input parameters and one (1) output parameter are used to accomplish each Bit Swap function.					
860	**BitSwap 1A Data** This is the main word in which 1 bit will be edited. All of the data from this word except the selected bit in Par 861 [BitSwap 1A Bit] are passed to Par 864 [BitSwap 1 Result].	Default: Min/Max:	0 32 bits of data	✓	RW	32-bit Boolean
865	**BitSwap 2A Data**					
870	**BitSwap 3A Data**					
875	**BitSwap 4A Data**					
880	**BitSwap 5A Data**					
885	**BitSwap 6A Data**					
861	**BitSwap 1A Bit** This specifies the bit to be replaced in Par 860 [BitSwap 1A Data].	Default: Min/Max:	0 0/31		RW	16-bit Integer
866	**BitSwap 2A Bit**					
871	**BitSwap 3A Bit**					
876	**BitSwap 4A Bit**					
881	**BitSwap 5A Bit**					
886	**BitSwap 6A Bit**					
862	**BitSwap 1B Data** This is the word from which the replacement bit will be selected. Only the selected bit is passed to Par 864 [BitSwap 1 Result].	Default: Min/Max:	0 32 bits of data	✓	RW	32-bit Boolean
867	**BitSwap 2B Data**					
872	**BitSwap 3B Data**					
877	**BitSwap 4B Data**					
882	**BitSwap 5B Data**					
887	**BitSwap 6B Data**					
863	**BitSwap1B Bit** This specifies the bit from Par 862 [BitSwap 1B Data] that will replace the specified bit in Par 860 [BitSwap 1A Data] and be loaded to Par 864 [BitSwap 1 Result]. A negative bit selection may be used to invert the data. Use “-32” to invert the value of bit 0.	Default: Min/Max:	0 -32/+31		RW	16-bit Integer
868	**BitSwap 2B Bit**					
873	**BitSwap 3B Bit**					
878	**BitSwap 4B Bit**					
883	**BitSwap 5B Bit**					
888	**BitSwap 6B Bit**					
864	**BitSwap 1 Result** This is the result of the Bit Swap operation. 	Default: Min/Max:	0 32 bits of data		RO	32-bit Boolean
869	**BitSwap 2 Result**					
874	**BitSwap 3 Result**					
879	**BitSwap 4 Result**					
884	**BitSwap 5 Result**					
889	**BitSwap 6 Result**					

No.	Name Description	Values		Linkable	Read-Write	Data Type
892	**SL Comm TP Sel** Enter or write a value to select SynchLink™ data displayed by Par 893 [SL Comm TP Data].	Default: Options:	0 = "Zero" 0 = "Zero" 1 = "SL MultA Src" 2 = "SL Mult A In" 3 = "SL Mult B In" 4 = "SL Mult Out" 5 = "Rx Axis Size" 6 = "Rx Dir Size" 7 = "Rx Buf Size" 8 = "Rx Pkg Size" 9 = "Rx Seq Cnt" 10 = "Rx Index 0" 11 = "Rx Index 1" 12 = "Rx Index 2" 13 = "BufSeqErrTim" 14 = "Rx Sys Rev" 15 = "Tx Axis Size" 16 = "Tx Dir Size" 17 = "Tx Buf Size" 18 = "Tx Pkg Size" 19 = "Tx Seq Cnt" 20 = "Tx Index 0" 21 = "Tx Index 1" 22 = "Tx Index 2" 23 = "Rx Vendor ID" 24 = "Rx ModuleTyp" 25 = "Rx Serial #"			
893	**SL Comm TP Data** Displays data selected by Par 892 [SL Comm TP Sel].	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
894	**SL CRC Err Accum** Displays the total accumulated number of Cycle Redundancy Check (CRC) errors. Clearing a fault resets this accumulator. This data is visible on the SynchLink diagnostics tab of the Peer Communication window. Refer to the *SynchLink System Design Guide*, publication 1756-TD008, for PowerFlex 700S SynchLink topologies, hardware and wiring details.	Default: Min/Max:	0 0/4294967296		RO	32-bit Integer
895	**SL CRC Error** Displays the number of CRC errors that occurred during the last test (last 8 mS). This data is visible on the SynchLink diagnostics tab of the Peer Communication window.	Default: Min/Max:	0 0/4294967296		RO	32-bit Integer
896	**SL BOF Err Accum** Displays the total accumulated number of Beginning of Frame (BOF) errors. Clearing a fault resets this accumulator. This data is visible on the SynchLink diagnostics tab of the Peer Communication window.	Default: Min/Max:	0 0/4294967296		RO	32-bit Integer
897	**SL BOF Error** Displays the number of BOF errors that occurred during the last test (last 8 mS). This data is visible on the SynchLink diagnostics tab of the Peer Communication window.	Default: Min/Max:	0 0/4294967296		RO	32-bit Integer
898	**SL CRC Err Limit** Identifies the number of CRC errors per test (per 8 mS) allowed before the drive declares a SynchLink CRC Error exception event. Set this limit on the SynchLink diagnostics tab of the Peer Communication window.	Default: Min/Max:	2 0/256		RW	32-bit Integer
899	**SL BOF Err Limit** The number of BOF errors per test (per 8 mS) allowed before the drive declares a SynchLink BOF Error exception event. Set this limit on the SynchLink diagnostics tab of the Peer Communication window.	Default: Min/Max:	2 0/256		RW	32-bit Integer
900	**SynchLink Rev** Indicates the current revision of the local SynchLink Programmable Logic firmware.	Default: Min/Max:	0.1 0.1/999.9		RO	16-bit Integer
901	**SL System Rev** Indicates the system revision of the SynchLink network. To be compatible on the network, all nodes must have the same major revision.	Default: Min/Max:	0.001 0.001/999.999		RO	32-bit Integer

902 SL Error Status
903 SL Error History

Indicates the presence of SynchLink faults. This data is visible on the SynchLink diagnostics tab of the Peer Communication window.

- Bit 0 [Sync Loss] indicates SynchLink communication has failed, after it had been established
- Bit 1 [Rx Loss] indicates the receive port is not receiving data, and the receive port configuration is set to receive data
- Bit 2 [Many BOF Err] indicates the number of Beginning Of Frame (BOF) errors exceeds limit set by Par 899 [SL BOF Err Limit]
- Bit 3 [Many CRC Err] indicates the number of Cyclic Redundancy Check (CRC) errors exceeds limit set by Par 898 [SL CRC Err Limit]
- Bit 4 [Pckg Msg Err] indicates the received package sequence number has not matched for 1.0S
- Bit 5 [CommForm Err] indicates the format of received data does not match the configuration of the receive port
- Bit 6 [Sys Rev Err] indicates the system revision in the received data does not match the value of Par 900 [SynchLink Rev]
- Bit 7 [Mult TKeeper] indicates more than one node on the SynchLink system is configured as a time keeper

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Mult TimeKpr	Sys Rev Err	Comm Frmt Er	Pckg Msg Err	Many CRC Err	Many BOF Err	Rx Loss	Sync Loss
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values			Linkable	Read-Write	Data Type
904	**SL Node Cnfg** Set bits to configure the SynchLink node. • Setting bit 0 [Time Keeper] configures the local node as the Time Master. • Setting bit 2 [Sync Now] configures the node to synchronize with the Time Master immediately (1-2S per node) on power-up or recovery. If you do not set bit 2, the node will stay in the fast mode, taking up to 36S per node to synchronize on power-up or recovery. • Setting bit 3 [Reset SL] resets SynchLink. This can be used to reset SynchLink after a configuration change instead of cycling the drive's power. Note: This parameter was changed to non-linkable for firmware version 3.01.						
905	**SL Rx CommFormat** Defines the node's communication format for receiving SynchLink data. This determines the number of axis data, direct data and buffered data words received. Configure the format by using the Peer Communication window in the DriveExecutive™ programming software. • Option 14 can be used to allow the drive to receive position data that can be used as a position reference. Notes: Options 6 and 16 were added for firmware version 2.04. Option 14 was added and this parameter was changed to non-linkable for firmware version 3.01.						
906	**SL Rx DirectSel0** Determines the destination for the data received at word 0 of direct received data. Configure the selection by using the Peer Communication window.						
907	**SL Rx DirectSel1** Determines the destination for the data received at word 1 of direct received data. Configure the selection by using the Peer Communication window.						
908	**SL Rx DirectSel2** Determines the destination for the data received at word 2 of direct received data. Configure the selection by using the Peer Communication window.						
909	**SL Rx DirectSel3** Determines the destination for the data received at word 3 of direct received data. Configure the selection by using the Peer Communication window. Notes: Options 16 - 26 were added for firmware version 2.04. These parameters were changed to non-linkable for firmware version 3.01.						
910	**SL Tx Comm Format** Defines the node's communication format for transmitting SynchLink data. This determines the number of axis data words, direct data words and buffered data words transmitted. Configure the format by using the Peer Communication window in the DriveExecutive™ programming software. • Value 14 can be used to allow the drive to transmit position data that can be used as a position reference. Note: Option 14 was added and this parameter was changed to non-linkable for firmware version 3.01.						
911	**SL Tx DirectSel0** Determines the source type for the data transmitted by direct transmit word 0. The source type selections are: no data, event, feedback and drive parameter.						
912	**SL Tx DirectSel1** Determines the source type for the data transmitted by direct transmit word 1. The source type selections are: no data, event, feedback and drive parameter.						
913	**SL Tx DirectSel2** Determines the source type for the data transmitted by direct transmit word 2. The source type selections are: no data, event, feedback and drive parameter.						
914	**SL Tx DirectSel3** Determines the source type for the data transmitted by direct transmit word 3. The source type selections are: no data, event, feedback and drive parameter. Note: These parameters were changed to non-linkable for firmware version 3.01.						

Options

	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reset SL	Sync Now	Reserved	Time Keeper
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

	Value	Axis (A)	Direct (D)	Buffered (B)
Options	0	0	0	0
	6	1	2	4
	7	0	2	18
	9	0	4	8
	14	1	3	14
	16	1	4	4
	17	0	4	18

Default: 0 = "No Data"

Options:

0 = "No Data"	14 = "Reserved"
1 = "SL Multiply"	15 = "Reserved"
2 = "Event P0"	16 = "Reserved"
3 = "Event P1"	17 = "Reserved"
4 = "Reserved"	18 = "Reserved"
5 = "Reserved"	19 = "Reserved"
6 = "Reserved"	20 = "Reserved"
7 = "Reserved"	21 = "Dir Tx Data"
8 = "Reserved"	22 = "Dir Rx Data"
9 = "Reserved"	23 = "E0 Accum"
10 = "Event Status"	24 = "E1 Accum"
11 = "Reserved"	25 = "Opt0 Accum"
12 = "Reserved"	26 = "Opt1 Accum"
13 = "Reserved"	

	Value	Axis (A)	Direct (D)	Buffered (B)
Options	0	0	0	0
	7	0	2	18
	9	0	4	8
	14	1	3	14
	17	0	4	18

Default: 0 = "No Data"

Options:

0 = "No Data"	14 = "Reserved"
1 = "SL Multiply"	15 = "Reserved"
2 = "Event P0"	16 = "Reserved"
3 = "Event P1"	17 = "Reserved"
4 = "Reserved"	18 = "Reserved"
5 = "Reserved"	19 = "Reserved"
6 = "Reserved"	20 = "Reserved"
7 = "Reserved"	21 = "Dir Tx Data"
8 = "Reserved"	22 = "Dir Rx Data"
9 = "Reserved"	23 = "E0 Accum"
10 = "Event Status"	24 = "E1 Accum"
11 = "Reserved"	25 = "Opt0 Accum"
12 = "Reserved"	26 = "Opt1 Accum"
13 = "Reserved"	

No.	Name Description	Values	Linkable	Read-Write	Data Type
915	**SL Rcv Events** Displays the received event status from Par 917 [SL Rx P0 Regis].				
916	**SL Clr Events** Set these bits to clear the corresponding event latches indicated in Par 915 [SL Rcv Events].				

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Opt0 Regis	Reserved	Reserved	Reserved	Reserved	Reserved	E1 Regis	E0 Regis
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0							

0 = False
1 = True

917	**SL Rx P0 Regis** Displays received port 0 registration data, if direct received data is configured to be port 0 registration data by the Rx Direct Data Selector (Parameters 905-909). Configure this selection by using the Peer Communication window.	Default: 0 Min/Max: -/+2147483648		RO	32-bit Integer
918	**SL Rx P1 Regis** Displays received port 1 registration data, if direct received data is configured to be port 1 registration data by the Rx Direct Data Selector (Parameters 905-909). Configure this selection by using the Peer Communication window.	Default: 0 Min/Max: -/+2147483648		RO	32-bit Integer
921	**SL Real2DInt In** Provides the floating point (real) input to the real to integer conversion function.	Default: 0.0000 Min/Max: -/+16.0000	✓	RW	Real
922	**SL Real2DInt Out** Displays the integer output of the real to integer conversion function. The value is the result of the formula: Par 921 [SL Real2DInt In] x Par 923 [SL Mult Base].	Default: 0 Min/Max: 0/65535		RO	16-bit Integer
923	**SL Mult Base** Specifies the base for SynchLink real to integer and integer to real conversion functions. Determines the resolution of the conversion results. You must use the same value at the transmitting node and receiving / multiplying nodes. Enter a value that will not produce an overflow - the product of this value and the inputs to the conversion and multiply functions must be less than 65,536.	Default: 10000.0000 Min/Max: 0.2000/50000.0000		RW	Real
924	**SL Mult A In** Displays the A Multiplier Input, as a floating point (real) value. This value is divided by the Par 923 [SL Mult Base]. The source of the A Multiplier is determined by the Rx Direct Data Selector (Parameters 905-909). The possible sources are: zero, Par 1054 [MulDiv 1 Mul], Par 1056 [MulDiv 1 Result], Par 1058 [MulDiv 2 Mul], or Par 1060 [MulDiv 2 Result]. The SynchLink Multiply function takes this input before it is converted to floating point.	Default: 0.0000 Min/Max: 0.0000/65535.0000		RO	Real
925	**SL Mult B In** The B Multiplier Input. This must be a floating point (real) value. The SynchLink Multiply function takes this input after it is converted to integer.	Default: 1.0000 Min/Max: 0.25000/2.0000	✓	RW	Real
926	**SL Mult Out** Displays the output of the SynchLink Multiply function as a floating point (real) value. The value is the result of the formula: Par 924 [SL Mult A In] source (integer) x Par 925 [SL Mult B In] / Par 923 [SL Mult Base] or Par 924 [SL Mult A In] x Par 925 [SL Mult B In]. Note: The SynchLink Multiply function produces an output that is always positive.	Default: 0.0000 Min/Max: 0.0000/65535.0000		RO	Real
927	**SL Mult State** Displays the status of the SynchLink Multiply function. • Bit 0 [Local Ovflow] indicates a math overflow due to local multiply. • Bit 1 [Rx Ovflow] indicates a math overflow in received data. • Bit 3 [Ftol Ovflow] indicates a math overflow in the real to integer conversion function.				

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Ftol Ovflow	Reserved	Rx Ovflow	Local Ovflow
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		

0 = False
1 = True

928	**Rx Dir Data Type** Sets the data type for the SynchLink received direct words. If the word's bit is set the data type is floating point (real). If the bit is not set the data type is integer.				

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	SLDir03 Real	SLDir02 Real	SLDir01 Real	SLDir00 Real
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		

0 = False
1 = True

No.	Name Description	Values	Linkable	Read-Write	Data Type
929 to 932	**SL Dir Data Rx00** to **SL Dir Data Rx03** This is the SynchLink direct data received. See Par 928 [Rx Dir Data Type] for data type configuration.	Default: 0 Min/Max: 32 bits of data		RO	32-bit Integer

933 **Rx Buf Data Type**
Sets the data type for the SynchLink received buffered data. If the word's bit is set the data type is floating point (real). If the bit is not set the data type is integer.

Options	Reserved	Reserved	SLBuf29 Real	SLBuf28 Real	SLBuf27 Real	SLBuf26 Real	SLBuf25 Real	SLBuf24 Real	SLBuf23 Real	SLBuf22 Real	SLBuf21 Real	SLBuf20 Real	SLBuf19 Real	SLBuf18 Real	SLBuf17 Real	SLBuf16 Real	SLBuf15 Real	SLBuf14 Real	SLBuf13 Real	SLBuf12 Real	SLBuf11 Real	SLBuf10 Real	SLBuf09 Real	SLBuf08 Real	SLBuf07 Real	SLBuf06 Real	SLBuf05 Real	SLBuf04 Real	SLBuf03 Real	SLBuf02 Real	SLBuf01 Real	SLBuf00 Real	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

934 to 951	**SL Buf Data Rx00** to **SL Buf Data Rx17** This is the SynchLink buffered data received. See Par 933 [Rx Buf Data Type] for data type configuration.	Default: 0 Min/Max: 32 bits of data		RO	32-bit Integer

964 **Tx Dir Data Type**
Indicates the data type of each Direct Transmit word. If the word's bit is set the data type is floating point (real). If the bit is not set the data type is integer. Use the Peer Communication window to configure this selection.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	SLDir03 Real	SLDir02 Real	SLDir01 Real	SLDir00 Real	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

965 to 968	**SL Dir Data Tx00** to **SL Dir Data Tx03** This is the SynchLink direct data transmitted. See Par 964 [Tx Dir Data Type] for data type configuration.	Default: 0 Min/Max: 32 bits of data	✓	RW	32-bit Integer

969 **Tx Buf Data Type**
Indicates the data type of each Buffered Transmit word. If the word's bit is set the data type is floating point (real). If the bit is not set the data type is integer. Use the Peer Communication window to configure this selection.

Options	Reserved	Reserved	SLBuf29 Real	SLBuf28 Real	SLBuf27 Real	SLBuf26 Real	SLBuf25 Real	SLBuf24 Real	SLBuf23 Real	SLBuf22 Real	SLBuf21 Real	SLBuf20 Real	SLBuf19 Real	SLBuf18 Real	SLBuf17 Real	SLBuf16 Real	SLBuf15 Real	SLBuf14 Real	SLBuf13 Real	SLBuf12 Real	SLBuf11 Real	SLBuf10 Real	SLBuf09 Real	SLBuf08 Real	SLBuf07 Real	SLBuf06 Real	SLBuf05 Real	SLBuf04 Real	SLBuf03 Real	SLBuf02 Real	SLBuf01 Real	SLBuf00 Real	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

970 to 987	**SL Buf Data Tx00** to **SL Buf Data Tx17** This is the SynchLink buffered data transmitted. See Par 969 [Tx Buf Data Type] for data type configuration.	Default: 0 Min/Max: 32 bits of data	✓	RO W	32-bit Integer

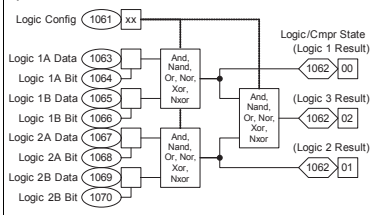
1000 **UserFunct Enable**
This parameter is used to enable and disable the optional user functions. If a bit is set the corresponding function in enabled. If the bit is not set the corresponding function is disabled and will not be processed (outputs will not be updated).
Notes: Bit 16 [Ratio Calc] was added for firmware version 2.04. Bit 5 [AddSub Math] and bit 6 [Delay Timer] were added for firmware version 3.01.

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	MOP	Ratio Calc	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Delay Timer	AddSub Math	MulDiv Math	Logic Functs	Converts	Sel Switches	User Params	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

No.	Name Description	Values			Linkable	Read-Write	Data Type
1001	**UserFunct Actual** This parameter displays the actual status of the user functions. If a bit is set, then the corresponding function is active. When Par 1001 [UserFunct Actual] does not match Par 1000 [UserFunct Enable] it is an indication that the function could not activate because of an error. Typically, the limitation is caused by processor overloading. Adjust Par 146 [FW TaskTime Sel] to a slower task cycle (more time). Options: Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, MOP, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, MulDiv Math, Logic Functs, Converts, Sel Switches, User Params Default: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 Bit: 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0 0 = False 1 = True						
1002 to **1011**	**UserData DInt 01** to **UserData DInt 10** These are general purpose parameters available for storage of 32-bit enumerated data or DInt data by the user. These parameters will be retained through power cycles.	Default: Min/Max:	0 -/+2147483648		✓	RW	32-bit Integer
1012 to **1021**	**User Data Real 01** to **UserData Real 10** These are general purpose parameters available for storage of Real data by the user. These parameters will be retained through power cycles.	Default: Min/Max:	0.0000 -/+2200000000.0000		✓	RW	Real
1022	**Sel Switch Ctrl** This is the control parameter for the switches and selector switch user functions. 16 Input Selector Switches use bits 0-4. • Bit 0 [SSW DataPass] Updates the output. If bit 0 is low, the output is NOT updated with the selected input. • Bit 1 [Sel Swtch 00] - 4 [Sel Swtch 04] BCD selection of the 16 inputs to the switch. Bit 1 is the Least Significant Bit. (Refer to Pars 1029 - 1046.) • Bit 5 [Sw Real 1 On] activates the Real switch. (Refer to Pars 1023 - 1025.) • Bit 6 [Sw DInt 1 On] activates the DInt switch. (Refer to Pars 1026 - 1028.) Options: Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Reserved, Sw DInt 1 On, Sw Real 1 On, Sel Swtch 03, Sel Swtch 02, Sel Swtch 01, Sel Swtch 00, SSW DataPass Default: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 Bit: 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0 0 = False 1 = True						
1023	**Swtch Real 1 NC** This is the Normally Closed input to the Real switch. When Par 1022 [Sel Switch Ctrl], bit 5 [Sw Real 1 On] is low, this input is updated to Par 1025 [Swtch Real 1 Output].	Default: Min/Max:	0.0000 -/+2200000000.0000		✓	RW	Real
1024	**Swtch Real 1 NO** This is the Normally Open input to the Real switch. When Par 1022 [Sel Switch Ctrl], bit 5 [Sw Real 1 On] is high, this input is updated to Par 1025 [Swtch Real 1 Output].	Default: Min/Max:	0.0000 -/+2200000000.0000		✓	RW	Real
1025	**Swtch Real 1 Out** This is the result of the Real switch. The output is loaded with the selected input based on Par 1022 [Sel Switch Ctrl], bit 5 [Sw Real 1 On]. If this parameter does not update, check the setting of Par 1000 [UserFunct Enable], bit 1 [User Params].	Default: Min/Max:	0.0000 -/+2200000000.0000			RO	Real
1026	**Swtch DInt 1 NC** This is the Normally Closed input to the DInt switch. When Par 1022 [Sel Switch Ctrl], bit 6 [Sw DInt 1 On] is low, this input is updated to Par 1028 [Swtch DInt 1 Output].	Default: Min/Max:	0.0000 -/+2200000000.0000		✓	RW	32-bit Integer
1027	**Swtch DInt 1 NO** This is the Normally Open input to the Real switch. When Par 1022 [Sel Switch Ctrl], bit 6 [Sw DInt 1 On] is high, this input is updated to Par 1028 [Swtch DInt 1 Output].	Default: Min/Max:	0.0000 -/+2200000000.0000		✓	RW	32-bit Integer
1028	**Swtch DInt 1 Out** This is the result of the switch. The output is loaded with the selected input based on Par 1022 [Sel Switch Ctrl], bit 6 [Sw DInt 1 On] . If this parameter does not update, check the setting of Par 1000 [UserFunct Enable], bit 1 [User Params].	Default: Min/Max:	0.0000 -/+2200000000.0000			RO	32-bit Integer
1029 to **1044**	**Sel Swtch In00** to **Sel Swtch In15** Set these values for the inputs to the selector switch specified in Par 1022 [Sel Switch Ctrl]. All inputs are entered as Real values. You may use the output of the selector switch as either Real or DInt. A conversion is done to create the DInt value.	Default: Min/Max:	0.0000 -/+2200000000.0000		✓	RW	Real

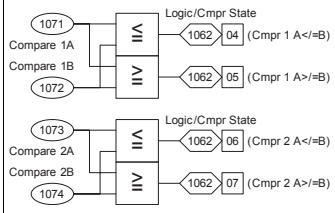
No.	Name Description	Values		Linkable	Read-Write	Data Type
1045	**SelSwtch RealOut** This is the result of the selector switch. The output is loaded with the selected input based on Par 1022 [Sel Switch Ctrl], bit 0 and bits 1-4. The output is only updated when Par 1022 [Sel Switch Ctrl], bit 0 [SSW DataPass] is high. If Par 1022 [Sel Switch Ctrl], bit 0 [SSW DataPass] is not high the output will not be updated to the selected input. If this parameter does not update, check the setting of Par 1000 [UserFunct Enable], bit 1 [User Params].	Default: Min/Max:	0.0000 -/+2200000000.0000		RO	Real
1046	**SelSwtch DIntOut** This value is the value of Par 1045 [SelSwtch RealOut] converted to a DInt value. Use this value for point to point positioning values.	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
1047	**DInt2Real1 In** Input value for a first DInt to Real value conversion. Note: This parameter name changed from [DInt2Real In] to [DInt2Real1 In] for firmware version 3.01.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
1048	**DInt2Real1 Scale** Input value to scale the first conversion from DInt to Real. This is a multiplication to the input value after conversion to a Real value. Note: This parameter name changed from [DInt2Real Scale] to [DInt2Real1 Scale] for firmware version 3.01.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
1049	**DInt2Real1Result** This is the resultant output of the first conversion form a DInt value to a Real value after scaling. Note: This parameter name changed from [DInt2RealResult] to [DInt2Real1Result] for firmware version 3.01.	Default: Min/Max:	0.0000 -/+2200000000.0000		RO	Real
1050	**Real2DInt In** Input value for Real to DInt value conversion.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
1051	**Real2DInt Scale** Input value to scale the conversion from Real to DInt. This is a multiplication to the input value after conversion to a DInt value.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
1052	**Real2DInt Result** This is the resultant output of the conversion form a Real value to a DInt value after scaling.	Default: Min/Max:	0 -/+2147483648		RO	32-bit Integer
1053	**MulDiv 1 Input** Input value to be scaled as need with the Multiplication and Division function. This input will be multiplied by Par 1054 [MulDiv 1 Mul] and then divided by Par 1055 [MulDiv 1 Div]. The result will be loaded to Par 1056 [MulDiv 1 Result] Equation: (Par 1053 * Par 1054) / Par 1055 = Par 1056	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
1054	**MulDiv 1 Mul** Set this value as the multiplier to the value of Par 1053 [MulDiv 1 Input]. The result will be divided by Par 1055 and loaded into Par 1056. See Par 1053.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
1055	**MulDiv 1 Div** Set this value as the divisor of the result of Par 1053 * Par 1054. The result will be loaded into Par 1056. See Par 1053.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
1056	**MulDiv 1 Result** This is the result output from the Multiplication and Division function. See Par 1053. Equation: Par 1056 = (Par 1053 * Par 1054) / Par 1055	Default: Min/Max:	0.0000 -/+2200000000.0000		RO	Real
1057	**MulDiv 2 Input** Input value to be scaled as need with the Multiplication and Division function. This input will be multiplied byPar 1058 [MulDiv 2 Mul] and then divided by Par 1059 [MulDiv 2 Div]. The result will be loaded to Par 1060 [MulDiv 2 Result]. Equation: (Par 1057 * Par 1058) / Par 1059 = Par 1060	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
1058	**MulDiv 2 Mul** Set this value as the multiplier to the value of Par 1057 [MulDiv 2 Input]. The result will be divided by Par 1059 and loaded into Par 1060. See Par 1057.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
1059	**MulDiv 2 Div** Set this value as the divisor of the result of Par 1057 * Par 1058. The result will be loaded into Par 1060. See Par 1057.	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
1060	**MulDiv 2 Result** This is the result output from the Multiplication and Division function. See Par 1057. Equation: Par 1060 = (Par 1057 * Par 1058) / Par 1059	Default: Min/Max:	0.0000 -/+2200000000.0000		RO	Real

No.	Name Description	Values			Linkable	Read-Write	Data Type
1061	**Logic Config** Set this parameter to configure the logic routine in Par 1063 - 1070. The result of this logic routine is displayed in Par 1062 [Logic/Cmpr State]. There are three configurable logic blocks as displayed below. Each block can be configured as (AND / NAND / OR / NOR / XOR / NXOR). Select the functions as desired. Multiple operation selection for one block will result in the first selection (LSB) being the active mode.						



Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Logic 3 NXOR	Logic 3 XOR	Logic 3 NOR	Logic 3 OR	Logic 3 NAND	Logic 3 AND	Logic 2 NXOR	Logic 2 XOR	Logic 2 NOR	Logic 2 OR	Logic 2 NAND	Logic 2 AND	Logic 1 NXOR	Logic 1 XOR	Logic 1 NOR	Logic 1 OR	Logic 1 NAND	Logic 1 AND	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

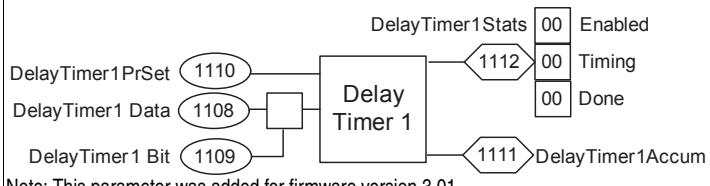
1062	**Logic/Cmpr State** Displays the logical states of the Logic routine (Par 1063 - 1070) and the results of the compare functions (Par 1071 - 1074).						



Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Cmpr 2 A>/=B	Cmpr 2 A</=B	Cmpr 1 A>/=B	Cmpr 1 A</=B	Reserved	Logic 3 Rslt	Logic 2 Rslt	Logic 1 Rslt	
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 = False 1 = True
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

1063	**Logic 1A Data** Selects the data word for the first input to Logic Block 1. See Par 1061 [Logic Config].	Default: Min/Max:	0 32 bits of data	✓	RW	32-bit Boolean
1064	**Logic 1A Bit** Selects the bit of Par 1063 [Logic 1A Data] for the first input to Logic Block 1. **Note:** To invert the selected input enter the desired bit as negative. Use -32 to invert bit 0.	Default: Min/Max:	0 -31/32		RW	16-bit Integer
1065	**Logic 1B Data** Selects the data word for the second input to Logic Block 1. See Par 1061 [Logic Config].	Default: Min/Max:	0 32 bits of data	✓	RW	32-bit Boolean
1066	**Logic 1B Bit** Selects the bit of Par 1065 [Logic 1B Data] for the second input to Logic Block 1. **Note**: To invert the selected input enter the desired bit as negative. Use -32 to invert bit 0.	Default: Min/Max:	0 -31/32		RW	16-bit Integer
1067	**Logic 2A Data** Selects the data word for the first input to Logic Block 2. See Par 1061 [Logic Config]	Default: Min/Max:	0 32 bits of data	✓	RW	32-bit Boolean
1068	**Logic 2A Bit** Selects the bit of Par 1067 [Logic 2A Data] for the first input to Logic Block 2. **Note**: To invert the selected input enter the desired bit as negative. Use -32 to invert bit 0.	Default: Min/Max:	0 -31/32		RW	16-bit Integer
1069	**Logic 2B Data** Selects the data word for the second input to Logic Block 2. See Par 1061 [Logic Config].	Default: Min/Max:	0 32 bits of data	✓	RW	32-bit Boolean
1070	**Logic 2B Bit** Selects the bit of Par 1069 [Logic 2B Data] for the second input to Logic Block 2. **Note**: To invert the selected input enter the desired bit as negative. Use -32 to invert bit 0.	Default: Min/Max:	0 -31/32		RW	16-bit Integer
1071	**Compare 1A** Sets input A for the Compare 1 function. The compare function allows the user to compare two values. The results of the compare are displayed in Par 1062 [Logic/Cmpr State]. Available functions are (A </= B , A >/= B).	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
1072	**Compare 1B** Sets input B for the Compare 1. The compare functions allow the user to compare two values. The results of the compare are displayed in Par 1062 [Logic/Cmpr State]. Available functions are (A </= B , A >/= B).	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real

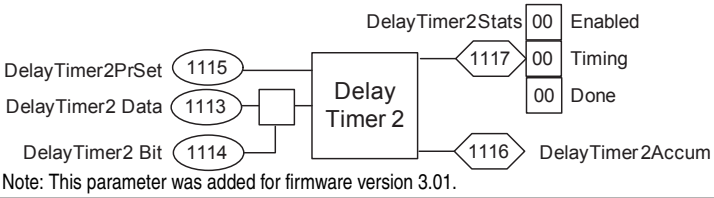
No.	Name Description	Values		Linkable	Read-Write	Data Type
1073	**Compare 2A** Sets input A for the Compare 2. The compare functions allow the user to compare two values. The results of the compare are displayed in Par 1062 [Logic/Cmpr State]. Available functions are (A </= B , A >/= B).	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
1074	**Compare 2B** Sets input B for the Compare 2. The compare functions allow the user to compare two values. The results of the compare are displayed in Par 1062 [Logic/Cmpr State]. Available functions are (A </= B , A >/= B).	Default: Min/Max:	0.0000 -/+2200000000.0000	✓	RW	Real
1086	**MOP Control** Motor Operated Potentiometer (MOP) control and configuration. • Bit 0 [Increase], if set, increments the MOP level (output) from Par 1087 [MOP Rate] to Par 1088 [MOP High Limit]. • Bit 1 [Decrease], if set, decrements the MOP level (output) from Par 1087 [MOP Rate] to Par 1089 [MOP Low Limit]. • Bit 2 [Reset], if set, resets the MOP level (output) to zero and Bit 0 [Increment] and Bit 1 [Decrement] are inhibited. • Bit 3 [Reset @ Stop], if set, resets the MOP level (output) to zero when stop is set. • Bit 4 [Reset @ PwrLs], if set, resets the MOP level (output) to zero when power is lost. Note: If either Bit 3 or Bit 4 is not set, the MOP level (output) will be saved until Bit 2 [Reset] is set. Options: Reset @ PwrLs / Reset @ Stop / Reset / Decrease / Increase Default: 0 / 0 / 0 / 0 / 0 Bit: 4 / 3 / 2 / 1 / 0					
1087	**MOP Rate** Sets the rate of change (increment or decrement) for the MOP. The setting 0.1/sec will equate to an increment or decrement of 0.1 for every second active. If this is used for the speed reference, that equals 10% of base speed every second for a total of 10 seconds to reach base speed reference.	Units: Default: Min/Max:	Sec 0.1000 Sec 0.0000/2200000000.0000	✓	RW	Real
1088	**MOP High Limit** Sets the upper limit for the MOP output. The MOP cannot be incremented above this level.	Units: Default: Min/Max:	Sec 1.0000 Sec 0.0000/2200000000.0000	✓	RW	Real
1089	**MOP Low Limit** Sets the lower limit for the MOP output. The MOP cannot be decremented below this level.	Units: Default: Min/Max:	Sec -1.0000 Sec -2200000000.0000/0.0000	✓	RW	Real
1090	**MOP Level Real** Actual output value of the MOP as a real number. This value is also found in the speed reference selection. A value of 1.0 equals base motor speed.	Units: Default: Min/Max:	Sec 0.0000 -/+2200000000.0000		RO	Real
1091	**MOP Scale Dint** Set this value for scaling of the Dint MOP output. The MOP is calculated and controlled as a Real value MOP. Use this scaler to adjust for an integer value. Use this parameter to scale the conversion from Par 1090 [MOP Level Real] to Par 1092 [MOP Level Dint].	Default: Min/Max:	1.0000 -/+2200000000.0000	✓	RW	Real
1092	**MOP Level Dint** Actual output value of the MOP as a DInt number. This value is scaled by Par 1091 [MOP Scale DInt].	Default: Min/Max:	0.0000 -/+2147483648		RO	32-bit Integer
1093 1094 1095	**Anlg In1LossCnfg** **Anlg In2LossCnfg** **Anlg In3LossCnfg** Selects drive action when an analog input signal loss is detected. Signal loss is defined as an analog signal less than 1 V or 2 mA. The signal loss event ends and normal operation resumes when the input signal is greater than or equal to 1.5 V or 3 mA. Note: This parameter was added for firmware version 3.01.	Default: Options:	0 = "Disabled" 0 = "Disabled" 1 = "Fault" 2 = "Hold Input" 3 = "Set Input Lo" 4 = "Set Input Hi" 5 = "Goto Preset1" 6 = "Hold OutFreq"			
1096	**AddSub 1 Input** Input value to be added to and/or subtracted from as need with the Add and Subtract function. This input will be added with Par 1097 [AddSub 1 Add]. The result will be subtracted from by the value in Par 1098 [AddSub 1 Subtrct]. The result of the operation is loaded to Par 1099 [AddSub 1 Result]. Equation: Par (1096 + Par 1097) - Par 1098 = Par 1099 Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1.0000 -/+2200000000.0000	✓	RW	Real
1097	**AddSub 1 Add** This value is added to the value of Par 1096 [AddSub 1 Input]. The result will be subtracted from by Par 1098 and loaded into Par 1099. See Par 1096. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1.0000 -/+2200000000.0000	✓	RW	Real
1098	**AddSub 1 Subtrct** This value is subtracted from the result of Par 1096 + Par 1097. The result will be loaded into Par 1099. See Par 1096. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1.0000 -/+2200000000.0000	✓	RW	Real

No.	Name Description	Values		Linkable	Read-Write	Data Type
1099	**AddSub 1 Result** This is the result output from the Add and Subtract function. See Par 1096. Equation: Par 1099 = (Par 1096 + Par 1097) - Par 1098 Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1.0000 -/+2200000000.0000		RO	Real
1100	**AddSub 2 Input** Input value to be added to and/or subtracted from as need with the Add and Subtract function. This input will be added with Par 1101 [AddSub 2 Add]. The result will be subtracted from by the value in Par 1102 [AddSub 2 Subtrct]. The result of the operation is loaded to Par 1103 [AddSub 2 Result]. Equation: Par (1100 + Par 1101) - Par 1102 = Par 1103 Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1.0000 -/+2200000000.0000	✓	RW	Real
1101	**AddSub 2 Add** This value is added to the value of Par 1100 [AddSub 2 Input]. The result will be subtracted from by Par 1102 and loaded into Par 1103. See Par 1100. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1.0000 -/+2200000000.0000	✓	RW	Real
1102	**AddSub 2 Subtrct** This value is subtracted from the result of Par 1100 + Par 1101. The result will be loaded into Par 1103. See Par 1100. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1.0000 -/+2200000000.0000	✓	RW	Real
1103	**AddSub 2 Result** This is the result output from the Add and Subtract function. See Par 1100. Equation: Par 1103 = (Par 1100 + Par 1101) - Par 1102 Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1.0000 -/+2200000000.0000		RO	Real
1104	**AddSub 3 Input** Input value to be added to and/or subtracted from as need with the Add and Subtract function. This input will be added with Par 1105 [AddSub 3 Add]. The result will be subtracted from by the value in Par 1106 [AddSub 3 Subtrct]. The result of the operation is loaded to Par 1107 [AddSub 3 Result]. Equation: Par (1104 + Par 1105) - Par 1106 = Par 1107 Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1.0000 -/+2200000000.0000	✓	RW	Real
1105	**AddSub 3 Add** This value is added to the value of Par 1104 [AddSub 3 Input]. The result will be subtracted from by Par 1106 and loaded into Par 1107. See Par 1104. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1.0000 -/+2200000000.0000	✓	RW	Real
1106	**AddSub 3 Subtrct** This value is subtracted from the result of Par 1104 + Par 1105. The result will be loaded into Par 1107. See Par 1104. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1.0000 -/+2200000000.0000	✓	RW	Real
1107	**AddSub 3 Result** This is the result output from the Add and Subtract function. See Par 1104. Equation: Par 1107 = (Par 1104 + Par 1105) - Par 1106 Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1.0000 -/+2200000000.0000		RO	Real
1108	**DelTmr1 TrigData** Link a word to this parameter that will control a user-defined on or off delay timer. The bit within the selected word that will control the delay timer is set by Par 1109 [DelTmr1 Trig Bit]. The user-defined on/off delay timer is enabled by setting bit 6 [Delay Timer] of Par 1000 [UserFunct Enable].  Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	0 32 bits of data	✓	RW	32-bit Boolean

No.	Name Description	Values	Linkable	Read-Write	Data Type
1109	**DelTmr1 Trig Bit** Selects the bit, from the word linked to Par 1108 [DelTmr1 TrigData], that will change the status of the user-defined delay timer to on or off. When Par 1109 [DelTmr1 Trig Bit] is a positive number, the delay timer is an "on" timer. When Par 1109 is a negative number, the delay timer is an "off" timer. Note: This parameter was added for firmware version 3.01.	Default: 0 Min/Max: -/+32		RW	16-bit Integer
1110	**DelayTimer1PrSet** The time that the value in Par 1111 [DelayTimer1Accum] must reach before bit 2 [Timer Done] in Par 1112 [DelayTimer1Stats] is set. Note: This parameter was added for firmware version 3.01.	Units: Sec. Default: 0 Min/Max: 0/600.00	✓	RW	16-bit Integer
1111	**DelayTimer1Accum** The amount of time that has elapsed since the timer was enabled (Par 1112 [DelayTimer1Stats], bit 2 set). Note: This parameter was added for firmware version 3.01.	Units: Sec. Default: 0 Min/Max: 0/600.00		RO	16-bit Integer
1112	**DelayTimer1Stats** The status of the user-defined on or off delay timer. Bit 0 [Timer Enable] when this bit is set, the timer is enabled. Bit 1 [Timer Timing] when this bit is set, the timer is running. Bit 2 [Timer Done] when this bit is set, the timer is done. Note: This parameter was added for firmware version 3.01.				

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Timer Done	Timer Timing	Timer Enable
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

1113	**DelTmr2 TrigData** Link a word to this parameter that will control a user-defined on or off delay timer. The bit within the selected word that will control the delay timer is set by Par 1114 [DelTmr2 Trig Bit]. The user-defined on/off delay timer is enabled by setting bit 6 [Delay Timer] of Par 1000 [UserFunct Enable].  Note: This parameter was added for firmware version 3.01.	Default: 0 Min/Max: 32 bits of data	✓	RW	32-bit Boolean
1114	**DelTmr2 Trig Bit** Selects the bit, from the word linked to Par 1113 [DelTmr2 TrigData], that will change the status of the user-defined delay timer to on or off. When Par 1114 [DelTmr2 Trig Bit] is a positive number, the delay timer is an "on" timer. When Par 1114 is a negative number, the delay timer is an "off" timer. Note: This parameter was added for firmware version 3.01.	Default: 0 Min/Max: -/+32	▲	RW	16-bit Integer
1115	**DelayTimer2PrSet** The time that the value in Par 1116 [DelayTimer2Accum] must reach before bit 2 [Timer Done] in Par 1117 [DelayTimer2Stats] is set. Note: This parameter was added for firmware version 3.01.	Units: Sec. Default: 0 Min/Max: 0/60000	✓	RW	16-bit Integer
1116	**DelayTimer2Accum** The amount of time that has elapsed since the timer was enabled (Par 1117 [DelayTimer2Stats], bit 1 set). Note: This parameter was added for firmware version 3.01.	Units: Sec. Default: 0 Min/Max: 0/60000		RO	16-bit Integer
1117	**DelayTimer2Stats** The status of the user-defined on or off delay timer. Bit 0 [Timer Enable] when this bit is set, the timer is enabled. Bit 1 [Timer Timing] when this bit is set, the timer is running. Bit 2 [Timer Done] when this bit is set, the timer is done. Note: This parameter was added for firmware version 3.01.				

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Timer Done	Timer Timing	Timer Enable
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values		Linkable	Read-Write	Data Type
1120	**Home Accel Time** Acceleration rate when homing. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	Sec. 10.00 0.01/6553.50	✓	RW	Real
1121	**Home Decel Time** Deceleration rate when homing. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	Sec. 10.00 0.01/6553.50	✓	RW	Real
1122	**Home Speed** Speed reference used when homing. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	RPM 0.0 -/+ 8.0	✓	RW	Real
1123	**Home Position** Home to go position. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	0 -/+ 2147483648	✓	RW	32-bit Integer
1125	**DC Brake Level** Defines the DC brake current level injected into the motor when “DC Brake” is selected as a stop mode. This also sets the braking current level when “Fast Stop” is selected. The DC braking voltage used in this function is created by a PWM algorithm and may not generate the smooth holding force needed for some applications. Refer to the *PowerFlex 700S with Phase II Control Reference Manual*, publication PFLEX-RM003. Note: This parameter was added for future use - not active for use with firmware version 3.01.	Units: Default: Min/Max:	Volts 0.0 0.0/1170.0	✓	RW	Real

ATTENTION: If a hazard of injury due to movement of equipment or material exists, an auxiliary mechanical braking device must be used.

ATTENTION: This feature should not be used with synchronous or permanent magnet motors. Motors may be demagnetized during braking.

1126	**DC Brake Time** Sets the amount of time DC brake current is “injected” into the motor. Note: This parameter was added for future use - not active for use with firmware version 3.01.	Units: Default: Min/Max:	Sec. 0.0 0.0/655.0	✓	RW	Real
1130	**PPMP Pos Command** Sets the position reference for the Motion Planner. The units are counts. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	0 -/+ 2147483648	✓	RW	32-bit Integer
1131	**PPMP Pos Mul** Part of the input scale block. Set this value as the multiplier to the value of Par 1130 [PPMP Pos Command]. Also see Par 1132 [PPMP Pos Div]. The scale block is enabled by setting bit 4 of Par 1134 []PPMP control. The the intermediate product must be < 31 bits. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1 1/2000000	✓	RW	32-bit Integer
1132	**PPMP Pos Div** Part of input scale block. Set this value as the divisor of the product of Par 1130 [PPMP Pos Command] and Par 1131 [PPMP Pos Mul]. Integer math applies. The scale block is enabled by setting bit 4 of Par 1134 []PPMP control. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	1 1/2000000	✓	RW	32-bit Integer
1133	**PPMP Scaled Cmd** Indicates the result of integer scaling of the position reference for the Motion planner or the Position loop. The units are counts. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	0 -/+ 2147483648		RO	32-bit Integer
1134	**PPMP Control** Establishes the operating condition for the Motion Planner. The operating mode(s) is selected if the corresponding bit is set. Bit 0 [Absolute] Absolute mode Bit 1 [Incremental] Incremental mode Bit 2 [Start] Start Bit 4 [Scaling En] Scaling enabled Bit 5 [Over Ride En] Override enabled Bit 6 [S Curve En] S Curve Enabled Bit 7 [Cond Hold] Conditional Hold Bit 8 [Pause] Pause Bit 9 [Re-Synch] Re-Synch Note: This parameter was added for firmware version 3.01.					

Options	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Re-Synch	Pause	Cond Hold	S Curve En	Over Ride En	Scaling En	Reserved	Start	Incremental	Absolute
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

No.	Name Description	Values			Linkable	Read-Write	Data Type
1135	**PPMP Status** Displays the current operating status of the Motion Planner. Note: This parameter was added for firmware version 3.01.						

Options

	Reserved	Reserved	Reserved	Running	Done	Zero Speed	Re-Synch	Pause	Cond Hold	S Curve En	Over Ride En	Scaling En	Reserved	Start	Incremental	Absolute
Default	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

0 = False
1 = True

1136	**PPMP Rev Spd Lim** Sets the maximum reverse speed reference limit. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	RPM -1.25 -/+ 8.0			RW	Real
1137	**PPMP Fwd Spd Lim** Sets the maximum forward speed reference limit. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	RPM +1.25 -/+ 8.0			RW	Real
1138	**PPMP Over Ride** Multiplies both forward (Par 1136 [PPMP Rev Spd Lim]) and reverse (Par 1137 [PPMP Fwd Spd Lim]) speed limits by this value. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	RPM 1.01 1.00/1.50			RW	Real
1139	**PPMP Accel Time** Sets the ramp time for acceleration (time to go from zero to full speed). Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	Sec. 10.00 0.01/6553.50		✓	RW	Real
1140	**PPMP Decel Time** Sets the ramp time for deceleration (time to go from full speed to zero speed). Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	Sec. 10.00 0.01/6553.50		✓	RW	Real
1141	**PPMP SCurve Time** Sets the amount of time that is applied to the S Curve. Half of the time specified is added at the beginning and half end of the acceleration and deceleration ramp. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	Sec. 0.05 0.00/4.00		✓	RW	Real
1142	**PPMP Spd Output** Provides a speed reference output from the Motion Planner. Typically this parameter would be used by the drives speed loop. A link could be made from a velocity reference input to this parameter. Note: This parameter was added for firmware version 3.01.	Units: Default: Min/Max:	RPM 0.0 -/+ 8.0			RO	Real
1143	**PPMP Pos Output** Provides a position reference output from the Motion Planner. This output is scaled in counts. Typically this parameter would be used by the drive's Position Loop. A link could be made from auxiliary position input to this parameter. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	0.0 -/+ 2147483648			RO	Real
1144	**PPMP Pos To Go** Provides indication of feedback counts remaining in the move. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	0.0 -/+ 2147483648			RO	Real
1145	**PPMP TP Select** Motion Planner test point selection. Note: This parameter was added for firmware version 3.01.	Default: Options:	0 = "Zero" 0 = "Zero" 1 = "MP FrctAccml" 2 = "MP WholeAccm" 3 = "MP EPR" 4 = "MP NBase" 5 = "MP Once Flag" 6 = "MP Pos Fdbk" 7 = "MP Pos Fdbk1" 8 = "MP ErrorSum" 9 = "MP ErrorSum1" 10 = "MP IntegHold" 11 = "MP Pos Exact" 12 = "MP Pos Diff" 13 = "MP One Shot" 14 = "MP Run Delay" 15 = "MP ResyncOne" 16 = "MP Task Time" 17 = "MP Mtn Calc" 18 = "MP AnlgPulse" 19 = "MP Rate In" 20 = "MP Rate Out" 21 = "MP Gain" 22 = "MP Kx" 23 = "MP FrctAccmR" 24 = "MP AccelRate" 25 = "MP DecelRate" 26 = "MP Cal" 27 = "SC Sum" 28 = "SC Index" 29 = "SC ArraySize" 30 = "SC Once" 31 = "SC Enable" 32 = "SC Ipos"				
1146	**PPMP TP DataDInt** Test point integer data. This data is meaningful only if the selection at Par 1145 [PPMP TP Select] is integer data. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	0.0 -/+ 2147483648			RO	32-bit Integer

No.	Name Description	Values		Linkable	Read-Write	Data Type
1147	**PPMP TP DataReal** Test point real data. This data is meaningful only if the selection at Par 1145 [PPMP TP Select] is not integer data. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	0.0 -/+2200000000.0000		RO	Real
1150	**DInt2Real2 In** Input value for a second DInt to Real value conversion. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	0 -/+2147483648	✓	RW	32-bit Integer
1151	**DInt2Real2 Scale** Input value to scale the second conversion from DInt to Real. This is a multiplication to the input value after conversion to a Real value. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	0.0 -/+2200000000.0000	✓	RW	Real
1152	**DInt2Real2Result** This is the resultant output of the second conversion form a DInt value to a Real value after scaling. Note: This parameter was added for firmware version 3.01.	Default: Min/Max:	0.0 -/+2200000000.0000		RO	Real

Parameter Cross Reference By Name

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Notes:

Troubleshooting

Chapter Objectives

This chapter provides information to guide you in troubleshooting the PowerFlex 700S. A list and description of drive faults (with possible solutions, when applicable) and alarms is included.

Faults and Alarms

A fault is a condition that stops the drive. There are two fault types.

Table 4.A Fault Type Descriptions

Type	Fault Description	
①	Non-Configurable	The cause of the fault must be corrected before the fault can be cleared.
②	User Configurable	Programming and commissioning personnel can configure the drive's response to these exception events. Responses include: • Ignore • Alarm • Fault Coast Stop • Fault Ramp Stop • Fault Current Limit Stop

Drive Status

The condition or state of your drive is constantly monitored. Any changes will be indicated through the front panel LEDs and/or the HIM (if present).

LED Indications

Figure 4.1 Drive Status Indicators

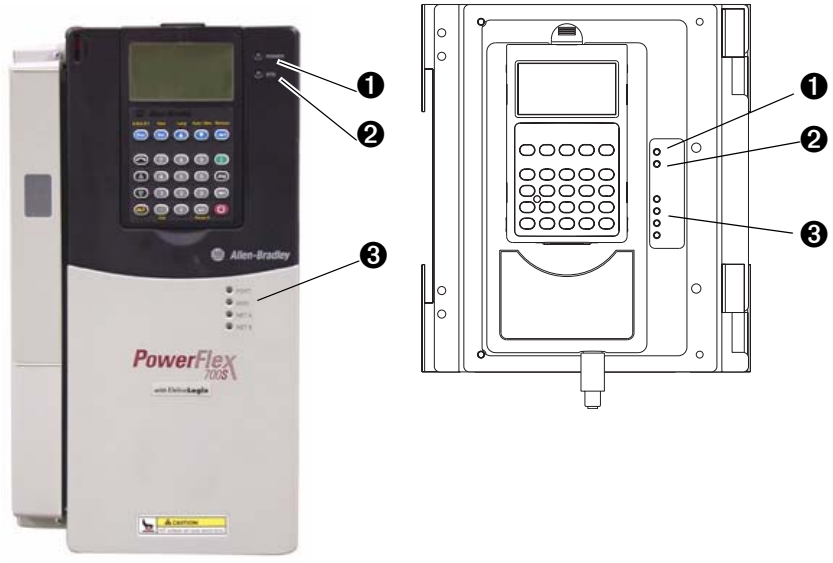


Table 4.B Drive Status Indicators

		#	Name	Color	State	Description	Action
DRIVE	Power Structure	❶	PWR (Power)	Green	Steady	Illuminates when power is applied to the drive.	No action - no faults present
		❷ STS (Status)		Green	Flashing	Drive ready, but not running & no faults are present.	No action - no faults present
					Steady	Drive running, no faults are present.	No action - no faults present
				Yellow	Flashing	A type 2 (non-configurable) alarm condition exists, drive continues to run.	A start inhibit exists. Refer to Par 156 [Start Inhibits]
					Steady	A type 1 (user configurable) alarm condition exists, but drive continues to run.	
				Red	Flashing	A fault has occurred.	Refer to Table Table 4.D for faults.
					Steady	A non-resettable fault has occurred.	
				Red / Yellow	Flashing Alternately	The drive is in flash recovery mode. The only operation permitted is flash upgrade.	Complete Flash Upgrade
	Control Assembly Communications	❸	PORT	Refer to the *Communication Adapter User Manual*		Status of DPI port internal communications (if present).	
			MOD			Status of communications module (when installed).	
			NET A			Status of network (if connected).	
			NET B			Status of secondary network (if connected).	

Precharge Board LED Indications

Precharge Board LED indicators are found on Frame 5 & 6 drives. The LEDs are located above the "Line Type" jumper shown in Figure 1.2.

Name	Color	State	Description
Power	Green	Steady	Indicates when precharge board power supply is operational
Alarm	Yellow	Flashing [1] [2] [3] [4] [5] [6] [7]	Number in "[ ]" indicates flashes and associated alarm(1): Low line voltage (<90%). Very low line voltage (<50%). Low phase (one phase <80% of line voltage). Frequency out of range or asymmetry (line sync failed). Low DC bus voltage (triggers ride-through operation). Input frequency momentarily out of range (40-65 Hz). DC bus short circuit detection active.
Fault	Red	Flashing [2] [4]	Number in "[ ]" indicates flashes and associated fault(2): DC bus short (Udc <2% after 20 ms). Line sync failed or low line (Uac <50% Unom).

(1) An alarm condition automatically resets when the condition no longer exists

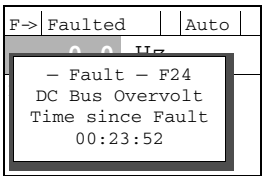
(2) A fault indicates a malfunction that must be corrected and can only be reset after cycling power.

Table 4.C Common Causes of a Run Inhibit

Examine Parameter 156 [Run Inhibit Status]			
Bit	**Description**		**Action**
1	No power is present at the Enable Terminal TB2- 16		Apply the enable
2, 3, 4	A stop command is being issued		Close all stop inputs
5	Power loss event is in progress, indicating a loss of the AC input voltage		Restore AC power
6	Data supplied by the power structure EEprom is invalid or corrupt		Cycle the power. If problem persists, replace the power structure.
7	Flash Update in Progress		Complete Flash Procedures
8	Drive is expecting a Start Edge and is receiving a continuous signal.		Open all start buttons and remove all start commands
9	Drive is expecting a Jog Edge and is receiving a continuous signal.		Open all jog buttons and remove all jog commands
10	A conflict exists between the Encoder PPR programming (Par 232 or 242) and the encoder configuration for edge counts (Par 233, bits 4 & 5).		Verify encoder data and reprogram
11	The drive cannot precharge because a precharge input is programmed and no signal is present.		Reprogram the input or close the precharge control contact.
12	Digital Configuration	Start input configured but stop not configured	Program *Par 825-830* to include a stop button, rewire the drive
		Run input configured but control options do not match	Program *Par 153*, Bit 8 to "0" (2 wire control)
		Start input configured but control options do not match	Program *Par 153*, Bit 8 to "1" (3 wire control)
		Multiple inputs configured as Start or Run	Reprogram *Par 825-830* so multiple starts, multiple runs or any combination do not exist
		Multiple inputs configured as Jog1	Reprogram *Par 825-830*so only (1) is set to Jog1
		Multiple inputs configured as Jog2	Reprogram *Par 825-830* so only (1) is set to Jog2
		Multiple inputs configured as Fwd/Rev	Reprogram *Par 825-830*so only (1) is set to Fwd/Rev
14	Invalid Feedback Device for Permanent Magnet Motor Control		Set *Par 222* to Value 5 (FB Opt Port0)

HIM Indication

The HIM also provides visual notification of a fault.

Condition	Display
Drive is indicating a fault. The LCD HIM immediately reports the fault condition by displaying the following: • "Faulted" appears in the status line • Fault number • Fault name • Time that has passed since the fault occurred Press Esc to regain control of the HIM	

Manually Clearing Faults

This section will contain a table that illustrates the HIM keystrokes necessary to clear faults.

Step	Key(s)
1. Press Esc to acknowledge the fault. The fault information will be removed so that you can use the HIM.	
2. Address the condition that caused the fault. The cause must be corrected before the fault can be cleared.	
3. After corrective action has been taken, clear the fault by one of these methods. • Press Stop • Cycle drive power • Select "Clear Faults" from Diagnostic - Faults menu	

Fault Descriptions

Table 4.D Fault Descriptions and Configuration Parameters

No.	Name	Type[1]	Description	Action
1	Abs Ovespd Det	②	Motor speed has exceeded the limits set by Pars 75 [Rev Speed Limit], 76 [Fwd Speed Limit] and Par 335 [Abs OverSpd Lim]	• Check to see if the encoder feedback polarity is correct. • Check to see if the drive is in torque mode, selected in Par 110 [Speed/TorqueMode] value 2 "Torque Ref". If the drive is in torque mode, verify that there is a load present. • Verify min/max settings in Par 75 [Rev Speed Lim] and Par 76 [Fwd Speed Lim]. Check to see if the load is overhauling. If it is overhauling, turn the bus regulator off using Par 414 [Brake/Bus Cnfg] bit 2 [BusRef High].
2	Vref Decel Fail	②	The value of Par 301 [Motor Spd Ref] has failed to decrease during a ramp to zero speed stop. This could possibly be due to a speed trim from Pars 21 [Speed Trim 1], 22 [Speed Trim 2] or 23 [Speed Trim 3].	
3	Encoder 0 Loss	①	One of the following has occurred on encoder 0: missing encoder (broken wire) quadrature error phase loss	• Reconnect encoder or replace encoder.
4	Encoder 1 Loss	①	One of the following has occurred on encoder 1: missing encoder (broken wire) quadrature error phase loss	• Reconnect encoder or replace encoder.

No.	Name	Type[1]	Description	Action
5	Opt Port 0 Loss	②	A fault on port 0 of the Hi-Resolution Encoder Feedback Option Card, MDI Option Card, Heidenhain, or Resolver Feedback Option Card has occurred. Par 260 [Stegmann0 Status] displays the fault status for port 0 of the Hi-Resolution Encoder Feedback Option Card. Par 264 [Heidenhain0 Stat] displays the fault status for port 0 of the Heidenhain Feedback Option Card. Par 269 [Resolver0 Status] displays the fault status for port 0 of the Resolver Feedback Option Card.	• Reconnect encoder or replace encoder • Reconnect option feedback card
6	Opt Port 1 Loss	②	The Linear sensor portion of the MDI feedback option card has detected a fault condition. Par 286 [Linear1 Status] displays the fault status for linear portion of the MDI feedback Option Card.	• Reconnect encoder or replace encoder • Reconnect option feedback card
7	Params Defaulted	②	All parameters are reset to default by user.	
8	SLink HW Fail	①	A fault on loading SynchLink firmware into FPGA on Controller board at power up.	• Replace Main Controller Board
9	SLink Comm Fail	②	A SynchLink communication fault has occurred. Par 902 [SL Error Status] displays SynchLink errors.	• Verify the SynchLink configurations, Par 904 [SL Node Cnfg], Par 905 [SL Rx CommFormat], and Par 910 [SL Tx CommFormat] • Reconnect SynchLink communication fibers
10	Drive Power Loss	①	DC Bus voltage has fallen below the minimum value Par 306 [DC Bus Voltage] displays bus voltage Par 330 [Fault TP Data] displays the minimum value when Par 329 [Fault TP Sel] is set to five The drive must first complete precharge before this check is made	• Verify AC line power
11	Motor OLoad Trip	①	A motor overload trip has occurred. Par 308 [Output Current] is squared, scaled and integrated over time. When this integrated value exceeds 1.0, this Exception Event occurs. The integrator's output can be viewed in Par 330 [Fault TP Data] when Par 329 [Fault TP Sel] is set to 13 “Mtr OL Outpt”. The overload integration rate is affected by Pars 336 [Motor OL Factor], 337 [Mtr I2T Curr Min], 338 [Mtr I2T Spd Min] and 339 [Mtr I2T Calibrat].	• Reduce mechanical load • Enter correct motor nameplate full load amps Par 2 [Motor NP FLA]
12	Motor OLoad Pend	①	A motor overload is pending. Par 308 [Output Current] is squared, scaled and integrated over time. When this integrated value exceeds 0.5, this Exception Event occurs. The integrator's output can be viewed in Par 330 [Fault TP Data] when Par 329 [Fault TP Sel] is set to 13 “Mtr OL Outpt”. The overload integration rate is affected by Pars 336 [Motor OL Factor], 337 [Mtr I2T Curr Min], 338 [Mtr I2T Spd Min] and 339 [Mtr I2T Calibrat].	• Reduce the mechanical load • Enter correct motor nameplate full load amps Par 2 [Motor NP FLA]
13	Motor Stalled	②	The motor has stalled. These three conditions have occurred at the same time for the amount of time specified in Par 373 [Motor Stall Time]: 1.) Drive is not stopped (Par 150 [Logic State Mach] not equal to zero) 2.) Drive is on limit (Par 304 [Limit Status] not equal to zero) 3.) Drive is at zero speed (Par 155 [Logic Status] / bit 13 [At Zero Spd] is set).	• Increase torque limit • Reduce mechanical load

No.	Name	Type[1]	Description	Action
14	Inv OTemp Pend	②	Par 313 [Heatsink Temp] is within 10× C of maximum. View the maximum heat sink temperature in Par 348 [Drive OL TP Data] when Par 347 [Drive OL TP Sel] is set to 30 “fMaxHsDegc”.	• Reduce the mechanical load • Lower the ambience temperature
15	Inv OTemp Trip	②	Par 313 [Heatsink Temp] is above the maximum limit or temperature sensor has failed (shorted or open. See Par 346 [Drive OL Status] / bit 0 [NTC Shorted] and bit 1 [NTC Open].	• Reduce the mechanical load • Lower the ambience temperature
16	Inv OLoad Pend	①	The drive's operating point is approaching the intermittent current rating limitation. If output current remains at or above present levels, an Inverter Overload condition will occur.	• Reduce the load on the drive
17	Inv OLoad Trip	①	The drive's operating point has exceeded the intermittent current rating and a foldback to the continuous rating in Par 400 [Rated Amps] has occurred.	• Reduce the mechanical load
18	Ext Fault Input	②	A digital input has detected an external fault. Enter a value of 3 “Ext Fault” or 38 “ExtFault Inv” in one of the following parameters to configure an input to detect an external fault: 825 [Digin 1 Sel] 826 [Digin 2 Sel] 827 [Digin 3 Sel] 828 [Dig In4 Sel] 829 [Dig In5 Sel] 830 [Dig In6 Sel]	
19	DSP Memory Error	②	Flash memory does not match the SRAM memory	• Cycle the drive power • If the fault remains, replace the Main Controller Board
20	DSP Device Error	②	A DSP (VPL) interrupt task has not been completed in the allotted time.	• Cycle the drive power • If the fault remains, replace the Main Controller Board
22	Over Frequency	②	Encoderless algorithm fails to converge on correct speed. Two possible causes: 1.) Velocity regulator is attempting to run below motor’s slip speed 2.) Frequency regulator “pulls out” and commanded motor frequency slows to maximum frequency limit.	
23	MC Commissn Fail	②	The drive has failed to complete either the Motor Autotuning procedure or the Power Circuits Diagnostics test. Parameters 463 [MC Diag Error 1], 464 [MC Diag Error 2], and 465 [MC Diag Error 3] display Motor Autotuning and Power Circuit Diagnostic faults. Par 465 [MC Diag Error 3] - Drive current, inductance, voltage and speed are not within Motor Nameplate specifications. This fault occur most frequently on low HP motors.	• Verify that motor nameplate data is entered correctly into the drive. • Verify the motor is wired for the correction voltage entering into the drive. • Verify the encoder (if used) and velocity feedback is correct. • Change tuning mode in to Par 515 [FVC Tune Config] to 9 “NoRotate Tune”.
24	DC Bus Overvolt	①	Bus voltage has exceeded 815V DC in 400V class drives or 405V DC for 200V class drives.	• Verify the AC Line. • Verify that either Par 414 [Brake/Bus Cnfg], the brake or bus regulator is enabled. • Verify that Par 128 [Regen Power Lim] is set properly. • If Par 414 bit 0 [Set Brake Enable] is set, verify braking resistor is properly sized.
25	Inv Trans Desat	①	The IGBT detects a transistor fail (Desat).	
26	Ground Fault	①	A current to earth exceeds 35% of the peak drive rating.	• Check the motor and external wiring to the drive output terminals for a grounded condition.
27	Inst Overcurrent	①	Instantaneous motor current exceeds 214% of rating	• Reduce mechanical load. • Check the motor and external wiring to the motor.

No.	Name	Type[1]	Description	Action
28	VPL/MC Comm Fail	②	A communication failure has occurred between the Velocity Position Loop (VPL) processor and the Motor Control (MC) processor on the main control board. Possible causes are: VPL is flashing MC firmware into the MC processor when HIM indicates "Loading Config". MC has failed to complete or pass diagnostic tests. MC has not detected VPL handshake activity for over 32 ms. VPL has not detected MC handshake activity for over 32 ms. This is indicated when Fault Test Point 15 or 16 equals 1. This test point is viewed in Par 330 [Fault TP Data] when Par 329 [Fault TP Select] is set to value 15 or 16.	• Cycle power • Reflash firmware • Replace Main Controller Board
29	PWM Signal short	②	This fault is detected when ever the actual IGBT gate is different than the commanded IGBT states. This fault is detected by the Motor Control (MC) processor.	
30	MC Firmware	②	One of the following Motor Control (MC) firmware errors has occurred: MC Task Over Run Illegal Interrupt Self Diagnostic Fault Data Error	• Cycle power • Reflash firmware • Replace Main Controller Board
31	Precharge Error	②	The precharge function has failed to complete within 30 seconds (default) of the precharge request. The precharge time out is configurable by Par 410 [PreChrg TimeOut]. A precharge request is initiated when the DC Bus voltage is above the Undervoltage Trip level and the precharge input is high (the requirement for the precharge being high can be bypassed by setting Par 411 [PreChrg Control] to 0 “Hold PrChrg”.	• Verify the value in Par 410 [PreChrg TimeOut]. • Verify the bit value in Par 411 [PreChrg Control] = 1 “Enbl PrChrg”.
32	PWM Asynch	②	The Motor Control Processor is not synchronized with SynchLink.	
33	+/- 15volt Power	①	The12V DC control voltage is outside the tolerance range. The positive voltage power must be within the band from +15.25 to +11.4V DC. The negative voltage power must be within the band from -16.6 to -10V DC.	• Replace switch mode power supply. For smaller frames, replace drive.
35	Parameter Chksum	①	The checksum read from the EEPROM does not match the checksum calculated	• Cycle power • Replace Main Controller Board
38	Brake OL Trip	①	The calculated temperature of the dynamic braking resistor is too high. The temperature is calculated by a thermal model. If the resistor is internal, the model uses resistor characteristic stored in the power structure EEPROM memory. If the resistor is external, the model uses values of parameters 416 [Brake PulseWatts] and 417 [Brake Watts].	• Verify actual temperature of brake - If hot, wait for brake to cool - If cold, cycle power to the drive • If cold, verify Par 416 [Brake PulseWatts] and Par 417 [Brake Watts] are correct.
39	PowerEE CRC Fail	②	The Cycling Ring Checksum (CRC) of the data stored in the Power Board EEPROM does not match the stored CRC.	• Cycle power • If High Horse Power units: - Check communication bus lines - 10 pin connector in Main Control Board, High Horse Power interface board, and fiber connections.
40	SLink Mult Oflow	②	A SynchLink Multiplier Overflow has occurred. Par 927 [SL Mult State] displays SynchLink multiplier overflow errors.	
41	Ridethru Timeout	②	The drive has been in a bus loss ridethrough condition for more than two seconds (default). The ridethrough timeout is configurable by Par 407 [Power Loss Time].	• Verify the AC Line. • Verify the value in Par 407 [Power Loss Time].
42	DC Bus Undervolt	①	Bus voltage has fallen below the level configured by Par 409 [Line Undervolts].	• Verify the AC Line. • In frames 1-4, and 9 - 13 verify the precharge resistor is present. (With power off, there should be a resistance between DC+ and BR+). In frames 5 & 6, check the precharge board for errors. See the precharge board LED for fault sequence.

No.	Name	Type[1]	Description	Action
43	VoltageFdbk Loss	①	Loss of Motor or DC Bus Voltage Feedback has occurred because of a communication failure between Motor Control and Voltage Feedback board.	• Check the communication line between Motor Control (MC) and Voltage Feedback board. • Replace the Voltage Feedback board.
44	Runtime Data Rst	②	Runtime data (hours, energy) has been reset to zero due to a checksum error.	
45	Enable Health	②	Safety circuit is active.	• Check input signal to the Safety circuit.
46	Interp Out Synch	①	Interpolator for position feedback lost synchronization with Velocity Position Loop (VPL).	
47	MC CML Task Fail	②	Current Minor Loop (CML) task has been delayed or run with incorrect interval.	• Cycle power.
48	No Ctrl Device	②	The controlling device (HIM or controller) has been disconnected while the drive was running.	
49	DPI Loss Port 1	①	The device at DPI port 1 has stopped communicating with the drive. A SCANport device is connected to a drive operating DPI devices at 500k Baud	• Verify DPI device is present and functional at port 1.
50	DPI Loss Port 2	①	The device at DPI port 2 has stopped communicating with the drive. A SCANport device is connected to a drive operating DPI devices at 500k Baud	• Verify DPI device is present and functional at port 2.
51	DPI Loss Port 3	①	The device at DPI port 3 has stopped communicating with the drive. A SCANport device is connected to a drive operating DPI devices at 500k Baud	• Verify DPI device is present and functional at port 3.
52	DPI Loss Port 4	①	The device at DPI port 4 has stopped communicating with the drive. A SCANport device is connected to a drive operating DPI devices at 500k Baud	• Verify DPI device is present and functional at port 4.
53	DPI Loss Port 5	①	The device at DPI port 5 has stopped communicating with the drive. A SCANport device is connected to a drive operating DPI devices at 500k Baud	• Verify DPI device is present and functional at port 5.
54	DPI Loss Port 6	①	The device at DPI port 6 has stopped communicating with the drive. A SCANport device is connected to a drive operating DPI devices at 500k Baud	• Verify DPI device is present and functional at port 6.
55	Net Loss DPI P1	②	A communications fault has occurred between the communication adapter at DPI port 1 and the network.	• Verify network connection. • Verify status of network.
56	Net Loss DPI P2	②	A communications fault has occurred between the communication adapter at DPI port 2 and the network.	• Verify network connection. • Verify status of network.
57	Net Loss DPI P3	②	A communications fault has occurred between the communication adapter at DPI port 3 and the network.	• Verify network connection. • Verify status of network.
58	Net Loss DPI P4	②	A communications fault has occurred between the communication adapter at DPI port 4 and the network.	• Verify network connection. • Verify status of network.
59	Net Loss DPI P5	②	A communications fault has occurred between the communication adapter at DPI port 5 and the network.	• Verify network connection. • Verify status of network.
60	Net Loss DPI P6	②	A communications fault has occurred between the communication adapter at DPI port 6 and the network.	• Verify network connection. • Verify status of network.
61	Logix Out of Run	②	The DriveLogix controller is in a Non-Run mode. Non-Run modes include program, remote-program and faulted modes.	• Clear fault
62	Logix Timeout	②	The communication connection to the DriveLogix controller has timed out.	
63	Logix Closed	①	The DriveLogix controller has closed the Controller to Drive connection.	• Verify drive is present in I/O

No.	Name	Type[1]	Description	Action
64	Logix Link Chng	②	A required link in the Controller to Drive Communication Format has been modified.	• Clear fault
65	HiHp In PhaseLs	①	*(High Horse Power Only)* AC Input Phase Loss - AC voltage is not present on one or two input phases.	1. Check for voltage on each AC input phase. 2. Check the status of each external AC input fuse.
66	HiHp Bus Com Dly	①	*(High Horse Power Only)* Bus Communication Time Delay - the processor has not received proper periodic feedback information.	Check fiber-optic connections between the Power Interface Circuit Board and Voltage Feedback Circuit Board.
67	HiHp Bus Link Ls	①	*(High Horse Power Only)* Bus Communication Link Loss - bus communication between the Power Interface Circuit Board and Voltage Feedback Circuit Board has halted.	Check fiber-optic connections between the Power Interface Circuit Board and Voltage Feedback Circuit Board.
68	HiHp Bus CRC Er	①	*(High Horse Power Only)* Bus Communication CRC Error - too many Cycling Ring Checksum (CRC) errors have occurred in the communication bus. A fast power cycle may cause the 700S Main Control Board to attempt to communicate with the ASIC Board before the ASIC Board is energized.	Check fiber-optic connections between the Power Interface Circuit Board and Voltage Feedback Circuit Board. Wait five minutes before re-energizing the drive.
69	HiHp Bus WtchDog	①	*(High Horse Power Only)* Bus Communication Watchdog Error - communication has halted in the communication bus, causing the watch dog timer to expire.	1. Check fiber-optic connections between the Power Interface Circuit Board and Voltage Feedback Circuit Board. 2. Check connections between the Main Control Board and the Power Interface Circuit Board. 3. Replace the Voltage Feedback Circuit Board. 4. Replace the Power Interface Circuit Board. 5. Replace the Main Control Board.
70	HiHp Fan Fdbk Ls	①	*(High Horse Power Only)* Fan Feedback Loss - a fan feedback signal has been lost.	1. Check the main cooling fan. 2. Check the Main Control Board cooling fan.
71	HiHp Drv OvrLoad	①	*(High Horse Power Only)* Drive Overload - the circuit board on the Power Module has detected an overload.	Measure output current of the drive. If the level is ever greater than the maximum drive rated output current level reduce the load. If the levels are always well below the drive rated levels, then replace the power module.
72	HiHp PwrBd PrcEr	①	*(High Horse Power Only)* Power Board Processor Error - a microprocessor on the Power Board has detected a communication error.	1. Check fiber-optic connections between the Power Interface Circuit Board and Voltage Feedback Circuit Board. 2. Check connections between the Main Control Board and the Power Interface Circuit Board. 3. Replace the Voltage Feedback Circuit Board 4. Replace the Power Interface Circuit Board. 5. Replace the Main Control Board.
73	HiHp PrChrg Cntc	①	*(High Horse Power Only)* Precharge Contactor Fault - proper contactor feedback has not occurred. The precharge contactor has probably failed to pick up or the feedback signal has failed. This fault only applies to DC input drives.	• Check precharge circuit wiring. • Check for loose connections on X50 terminal block and/or the X9 and X15 connectors on the ASIC Board.
74	HiHp PwrEE Error	①	*(High Horse Power Only)* Power EEPROM Error - the rating of the drive and data in the Power EEPROM on the Power Board do not match.	Replace output power module or program a new power board.
75	HiHP PwrBd Otemp	①	*(High Horse Power Only)* Power Board Over-Temperature - temperature of the Power Board on has exceeded 85° C.	Check the main cooling fan and fan power supply, replace if necessary.
76	HiHP HardwareVer	①	(*High Horse Power Star-coupler Frame 12 Only*) The left and right side inverter units have different current ratings, or the ASIC board on the power-board is not functioning.	Check the version of each inverter (left and right units), then replace the unit.
77	HiHP CurrUnblnce	①	(*High Horse Power Star-coupler Frame 12 Only*) The output current between the left and right side inverter units are unbalanced (20% of current feedback rating, e.g. 184A = 920A * 0.2).	Check motor wiring for each unit.

No.	Name	Type[1]	Description	Action
78	HiHP VoltUnblnce	①	(*High Horse Power Star-coupler Frame 12 Only*) The bus voltage for the left and right side inverter units is unbalanced (6% of normal bus voltage, e.g. 41Vdc = 675Vdc * 0.06).	Check input power and wiring for each unit.
81	+ Soft Over Trvl	②	*(Motion Only)* Position feedback exceeds the maximum positive travel setting, Par 694 [Motn Mx Pos Trvl].	
82	- Soft Over Trvl	②	*(Motion Only)* Position feedback, exceeds the maximum negative travel setting, Par 695 [Motn Mx Neg Trvl].	
83	+ Hard Over Trvl	②	*(Motion Only)* Signal for the hardware positive over travel appears on a digital input.	
84	- Hard Over Trvl	②	*(Motion Only)* Signal for the hardware negative over travel appears on a digital input.	
85	Position Error	②	*(Motion Only)* Par 769 [Position Error] exceeded Par 696 [Motn PositErrTol].	Verify the value in Par 696 [Motn PositErrTol].
88	Stahl Optics	②	Linear Stahl Encoder detected a fault. Par 291 [Lin1Stahl Status] shows the details of the fault.	• Reconnect encoder or replace encoder. • Reconnect option feedback card.
94	Analog In 1 Loss	②	Analog Input channel 1 is lost. For configuration of Analog Input channel 1, see Par 1093 [Analog In 1 Loss].	• Check condition of Analog Input channel 1. • Change configuration for parameter 1093 [Analog In 1 Loss].
95	Analog In 2 Loss	②	Analog Input channel 2 is lost. For configuration of Analog Input channel 2, see Par 1094 [Analog In 2 Loss].	• Check condition of Analog Input channel 2. • Change configuration for parameter 1094 [Analog In 2 Loss].
96	Analog In 3 Loss	②	Analog Input channel 3 is lost. For configuration of Analog Input channel 3, see Par 1095 [Analog In 3 Loss]	• Check condition of Analog Input channel 3. • Change configuration for parameter 1095 [Analog In 3 Loss].
129	Faults Cleared	①	Indicate on HIM and place in fault queue after the faults have been cleared.	
130	Fault Q Cleared	①	Place in fault queue after the fault queue have been cleared	
131	Alarm Cleared	①	Place in alarm queue after the alarm has been cleared.S	
132	Alarm Q Cleared	①	Place in alarm queue after the alarm queue has been cleared.	

[1] Refer to Table 4.A on page 4-1 for Fault Type Descriptions.

Table 4.E Fault Description Cross Reference

Fault	No.
+/- 15volt Power	33
+ Hard Over Trvl	83
- Hard Over Trvl	84
+ Soft Over Trvl	81
- Soft Over Trvl	82
Abs Ovespd Det	1
Alarm Cleared	131
Alarm Q Cleared	132
Analog In 1 Loss	94
Analog In 2 Loss	95
Analog In 3 Loss	96
Brake OL Trip	38
DC Bus Overvolt	24
DC Bus Undervolt	42
DPI Loss Port 1	49
DPI Loss Port 2	50
DPI Loss Port 3	51
DPI Loss Port 4	52
DPI Loss Port 5	53
DPI Loss Port 6	54
Drive Power Loss	10

Fault	No.
Inst Overcurrent	27
Interp Out Synch	46
Inv OLoad Pend	16
Inv OLoad Trip	17
Inv OTemp Pend	14
Inv OTemp Trip	15
Inv Trans Desat	25
Logix Closed	63
Logix Link Chng	64
Logix Out of Run	61
Logix Timeout	62
MC CML Task Fail	47
MC Commissn Fail	23
MC Firmware	30
Motor OLoad Pend	12
Motor OLoad Trip	11
Motor Stalled	13
Net Loss DPI P1	55
Net Loss DPI P2	56
Net Loss DPI P3	57
Net Loss DPI P4	58

Fault	No.
DSP Device Error	20
DSP Memory Error	19
Enable Health	45
Encoder 0 Loss	3
Encoder 1 Loss	4
Ext Fault Input	18
Faults Cleared	129
Fault Q Cleared	130
Ground Fault	26
HiHp Bus Com Dly	66
HiHp Bus CRC Er	68
HiHp Bus WtchDog	69
HiHp Bus Link Ls	67
HiHP CurrUnblnce	77
HiHp Drv OvrLoad	71
HiHp Fan Fdbk Ls	70
HiHP HardwareVer	76
HiHp In PhaseLs	65
HiHp PrChrg Cntc	73
HiHP PwrBd Otemp	75
HiHp PwrBd PrcEr	72
HiHp PwrEE Error	74
HiHP VoltUnblnce	78

Fault	No.
Net Loss DPI P5	59
Net Loss DPI P6	60
No Ctrl Device	48
Over Frequency Fault	22
Opt Port 0 Loss	5
Opt Port 1 Loss	6
Parameter Chksum	35
Params Defaulted	7
Position Error	85
PowerEE CRC Fail	39
Precharge Error	31
PWM Asynch	32
PWM Signal short	29
Ridethru Timeout	41
Runtime Data Rst	44
SLink Comm Fail	9
SLink HW Fail	8
SLink Mult Oflow	40
Stahl Optics	88
VoltageFdbk Loss	43
VPL/MC Comm Fail	28
Vref Decel Fail	2

Notes:

Supplemental Information

Chapter Objectives

Specifications

Category	Specification										
		Frames 1-6 (690V Drive frames 5 & 6 only)						Frames 9 & up				
Protection		200-208V Drive	240V Drive	380/400V Drive	480V Drive	600V Drive	690V Drive	380/400V Drive	480V Drive	500V Drive	600V Drive	690V Drive
	AC Input Overvoltage Trip:	247VAC	285VAC	475VAC	570VAC	690VAC	863VAC	475VAC	570V AC	611V AC	690VAC	863VAC
	Bus Overvoltage Trip:	350VDC	405VDC	675VDC	810VDC	1013VDC	1164VDC	675VDC	810VDC	810VDC	1013VDC	1164VDC
	Bus Undervoltage Trip:	Adjustable						Adjustable				
	Nominal Bus Voltage:	281VDC	324VDC	540VDC	648VDC	810VDC	931VDC	540VDC	648VDC	645VDC	810VDC	931VDC
	Heat Sink Thermistor:	Monitored by microprocessor overtemp trip						Monitored by microprocessor overtemp trip				
	Drive Overcurrent Trip Software Current Limit: Hardware Current Limit: Instantaneous Current Limit:	Calculated value, 105% of motor rated to 200% of drive rated 105% of 3 sec. rating (158%-210%) 143% of 3 sec rating (215%-287%)						Calculated value, 105% of motor rated to 200% of drive rated 360% of rated Heavy Duty current (typical) —				
	Line Transients:	Up to 6000 volts peak per IEEE C62.41-1991						up to 6000 volts peak per IEEE C62.41-1991				
	Control Logic Noise Immunity:	Showering arc transients up to 1500V peak						Showering arc transients up to 1500V peak				
	Power Ride-Thru:	15 milliseconds at full load						15 milliseconds at full load				
	Logic Control Ride-Thru	0.25 sec., drive not running						0.25 seconds, drive not running				
	Ground Fault Trip:	Phase-to-ground on drive output						Phase-to-ground on drive output				
	Short Circuit Trip:	Phase-to-phase on drive output						Phase-to-phase on drive output				

Category	Specification		
		Frames 1-6 (690V Drive frames 5 & 6 only)	**Frames 9 & up**
Agency Certification		The drive is designed to meet applicable requirements of the following codes/standards: IEC 61800-2 Adjustable speed electrical power drive systems - General requirements IEC 61800-5-1 Adjustable speed electrical power drive systems - Safety requirements NFPA 70 – US National Electric Code NEMA 250 – Enclosures for Electrical Equipment	The drive is designed to meet applicable requirements of the following codes/standards: IEC 61800-2 Adjustable speed electrical power drive systems - General requirements IEC 61800-5-1 Adjustable speed electrical power drive systems - Safety requirements NFPA 70 - US National Electrical Code
	c UL US	UL and cUL Listed to UL508C and CAN/CSA - 22.2 No. 14-95	UL and cUL Listed to UL508C and CAN/CSA - 22.2 No. 14-95
	CE	Marked for all applicable European Directives EMC Directive (89/336/EEC) Emissions EN 61800-3 Adjustable Speed electrical power drive systems Part 3 Immunity EN 61800-3 Second Environment, Restricted Distribution Low Voltage Directive (73/23/EEC) EN 50178 Electronic Equipment for use in Power Installations	Marked for all applicable European Directives EMC Directive (89/336/EEC) Emissions EN 61800-3 Adjustable Speed electrical power drive systems Part 3 Low Voltage Directive (73/23/EEC) EN 50178 Electronic Equipment for use in Power Installations
	TÜV Rheinland Product Safety / EMC Production inspected TÜV TUV Rheinland of North America / EN 50178 TÜV Rheinland / Bauart geprüft Functional FS Safety Type approved	TUV Rheinland (applies to frames 1 - 6, 200/400V, and frames 5 & 6, 690V only) TUV Functional Safety Report only for frames 1 - 4, 600V (no FS mark on the label)	TUV functional safety report only (no FS mark on the label)
Environment	Altitude:	1000 m (3300 ft.) max. without derating	1000 m (3300 ft) max. without derating
	Surrounding Air Temperature without Derating: Open Type: IP20: NEMA Type 1: IP56, NEMA Type 4X:	 0 to 50° C (32 to 122° F) 0 to 50° C (32 to 122° F) 0 to 40° C (32 to 104 ° F) 0 to 40 ° C (32 to 104 ° F) **Note**: Frames 9 & 10 are rated 0 to 40 ° C (32 to 104 ° F) surrounding air.	Based on drive rating, refer to Drive Frame chapters
	Storage Temperature (all const.):	-40 to 70° C (-40 to 158° F)	–40 to 70 degrees C (–40 to 158 degrees F)
	Relative Humidity:	5 to 95% non-condensing	5 to 95% non-condensing
	Shock:	10G peak for 11 ms duration (+/- 1.0 ms)	15G peak for 11ms duration (±1.0 ms)
	Vibration:	0.152 mm (0.006 in.) displacement, 1G peak, 5.5 Hz	2 mm (0.0787 in.) displacement, 1G peak EN50178 / EN60068-2-6
	Atmosphere	**Important:** Drive **must** **not** be installed in an area where the ambient atmosphere contains volatile or corrosive gas, vapors or dust. If the drive is not going to be installed for a period of time, it must be stored in an area where it will not be exposed to a corrosive atmosphere.	**Important:** Drive **must** **not** be installed in an area where the ambient atmosphere contains volatile or corrosive gas, vapors or dust. If the drive is not going to be installed for a period of time, it must be stored in an area where it will not be exposed to a corrosive atmosphere.
Electrical	AC Input Voltage Tolerance:	See Input Voltage Range/Tolerance on page C-1 for Full Power and Operating Range	See Input Voltage Range/Tolerance on page C-1 for Full Power and Operating Range
	Frequency Tolerance:	47-63 Hz	47-63 Hz.
	Input Phases:	Three-phase input provides full rating for all drives. Single-phase operation provides 50% of rated current.	Three-phase input provides full rating for all drives. Single-phase operation provides 50% of rated current.
	DC Input Voltage Tolerance	 +/- 10% of Nominal Bus Voltage (above)	 +/- 10% of Nominal Bus Voltage (above)
	Displacement Power Factor:	0.98 across speed range	0.98 across speed range
	Efficiency:	97.5% at rated amps, nominal line volts.	97.5% at rated amps, nominal line volts.
	Max. Short Circuit Current Rating: Using Recommended Fuse or Circuit Breaker Type	Maximum short circuit current rating to match specified fuse/ circuit breaker capability. ≤ 200,000 Amps	≤ 200,000 Amps
	Maximum Drive to Motor Power Ratio	The drive to motor rating cannot exceed a 2:1 ratio	The drive to motor rating cannot exceed a 2:1 ratio

Category	Specification		
		Frames 1-6 (690V Drive frames 5 & 6 only)	**Frames 9 & up**
Control	Method Induction Motor: Brushless Motor:	Sine coded PWM with programmable carrier frequency, Indirect Self-Organized, Field-Oriented Control, Current-regulated. Ratings apply to all drives. Refer to the PowerFlex® 700S - Phase II Control Reference Manual, publication PFLEX-RM003, for derating guidelines. The drive can be supplied as 6 pulse or 12 pulse in a configured package.	Sine coded PWM with programmable carrier frequency, Indirect Self-Organized, Field-Oriented Control, Current-regulated. Ratings apply to all drives. Refer to the PowerFlex® 700S - Phase II Control Reference Manual, publication PFLEX-RM003, for derating guidelines. The drive can be supplied as 6 pulse or 12 pulse in a configured package.
	Carrier Frequency	Drive rating: 4 kHz Settings: 2, 4, 6, 8, 10 kHz (6 kHz is for V/Hz operation only)	Drive rating: 2 kHz Settings: 2, 4, 6, 8, 10 kHz (6 kHz is for V/Hz operation only)
	Output Voltage Range:	0 to rated motor voltage	0 to rated motor voltage
	Output Frequency Range:	0 – 400 Hz	0 – 400 Hz
	Speed Control	Speed regulation - without feedback 0.1% of base speed across 120:1 speed range 120:1 operating range 50 rad/sec bandwidth	Speed regulation - without feedback 0.1% of base speed across 120:1 speed range 120:1 operating range 50 rad/sec bandwidth
		Speed regulation - with feedback 0.001% of base speed across 120:1 speed range 1000:1 operating range 744 rad/sec bandwidth	Speed regulation - with feedback 0.001% of base speed across 120:1 speed range 1000:1 operating range 300 rad/sec bandwidth
	Torque Regulation	Torque Regulation - without feedback +/-5%, 600 rad/sec bandwidth	Torque Regulation - without feedback +/-10%, 600 rad/sec bandwidth
		Torque Regulation - with feedback +/-2%, 2500 rad/sec bandwidth	Torque Regulation - with feedback +/-5%, 2500 rad/sec bandwidth
	Selectable Motor Control:	Field Oriented Control with and without a feedback device and permanent magnet motor control	Field Oriented Control with and without a feedback device and permanent magnet motor control
	Stop Modes:	Multiple programmable stop modes including – Ramp, Coast and Current Limit	Multiple programmable stop modes including – Ramp, Coast and Current Limit
	Accel/Decel	Independently programmable accel and decel times adjustable from 0 to 6553.5 in 0.1 second increments.	Independently programmable accel and decel times adjustable from 0 to 6553.5 in 0.1 second increments.
	S-Curve Time	Adjustable from 0.5 to 4.0 seconds	Adjustable from 0.5 to 4.0 seconds
	Intermittent Overload:	110% Overload capability for up to 1 minute 150% Overload capability for up to 3 seconds	110% Overload capability for up to 1 minute 150% Overload capability for up to 3 seconds
	Current Limit Capability:	Independent Motoring and Regenerative Power Limits programmable to 800% of rated output current	Independent Motoring and Regenerative Power Limits programmable to 800% of rated output current
	Electronic Motor Overload Protection	Class 10 protection with speed sensitive response. Investigated by U.L. to comply with N.E.C. Article 430 U.L. File E59272, volume 12.	Class 10 protection with speed sensitive response. Investigated by U.L. to comply with N.E.C. Article 430 U.L. File E59272, volume 12.

Category	Specification		
		Frames 1-6 (690V Drive frames 5 & 6 only)	**Frames 9 & up**
Feedback	Encoder Inputs (2):	Dual Channel Plus Marker, Isolated with differential transmitter Output (Line Drive) Incremental, Dual Channel Quadrature type	Dual Channel Plus Marker, Isolated with differential transmitter Output (Line Drive) Incremental, Dual Channel Quadrature type
	Encoder Voltage Supply:	5V DC or 12 V DC 320 mA/channel 5V DC requires an external power supply. 12 V DC minimum high state voltage of 7V DC, maximum low state voltage of 0.4V DC	5V DC or 12 V DC 320 mA/channel 5V DC requires an external power supply. 12 V DC minimum high state voltage of 7V DC, maximum low state voltage of 0.4V DC
	Maximum Input Frequency:	400 kHz	400 kHz
	Stegmann Option:		
	Encoder Voltage Supply:	11.5V DC @ 130 mA	11.5V DC @ 130 mA
	Hi-Resolution Feedback:	Sine/Cosine 1V P-P Offset 2.5	Sine/Cosine 1V P-P Offset 2.5
	Maximum Cable Length:	182 m (600 ft.)	182 m (600 ft.)
	RS-485 Interface:	Hi-Resolution Feedback Option card obtains the following information via the Hiperface RS-485 interface shortly after power-up: Address, Command Number, Mode, Number of turns, Number of Sine/Cos cycles, Checksum	Hi-Resolution Feedback Option card obtains the following information via the Hiperface RS-485 interface shortly after power-up: Address, Command Number, Mode, Number of turns, Number of Sine/Cos cycles, Checksum
	Customer-I/O Plug (P1) - Hi Res:	Allen-Bradley PN: S94262912 Weidmuller PN: BL3.50/90/12BK	Allen-Bradley PN: S94262912 Weidmuller PN: BL3.50/90/12BK
	Resolver Option:		
	Excitation Frequency:	2400 Hz	2400 Hz
	Excitation Voltage:	4.25-26 Vrms	4.25-26 Vrms
	Operating Frequency Range:	1 - 10 kHz	1 - 10 kHz
	Resolver Feedback Voltage:	2V ± 300 mV	2V ± 300 mV
	Maximum Cable Length:	304.8 meters (1000 ft.)	304.8 meters (1000 ft.)
DriveLogix	User Available MemoryBase:	1.5 megabytes	1.5 megabytes
	Battery:	1756-BA1 (Allen-Bradley PN 94194801) 0.59g lithium	1756-BA1 (Allen-Bradley PN 94194801) 0.59g lithium
	Serial Cable:	1761-CBLPM02 to 1761-NET-AIC	1761-CBLPM02 to 1761-NET-AIC
		1761-CBLPA00 to 1761-NET-AIC	1761-CBLPA00 to 1761-NET-AIC
		1756-CP3 directly to controller	1756-CP3 directly to controller
		1747-CP3 directly to controller	1747-CP3 directly to controller
		category 3 (2)	category 3 (2)
	Compact I/O Connection:	Up to (16) modules	Up to (16) modules
	Cable:	20D-DL2-CL3 20D-DL2-CR3	20D-DL2-CL3 20D-DL2-CR3

DPI Communication Configurations

Typical Programmable Controller Configurations

Important: If programs are written that continuously write information to the drive, care must be taken to properly format the block transfer. If attribute 10 is selected for the block transfer, values will be written only to RAM and will not be saved by the drive. This is the preferred attribute for continuous transfers. If attribute 9 is selected, each program scan will complete a write to the drives non-volatile memory (EEprom). Since the EEprom has a fixed number of allowed writes, continuous block transfers will quickly damage the EEprom. Do Not assign attribute 9 to continuous block transfers. Refer to the individual communications adapter User Manual for additional details.

Logic Command Word

Logic Bits																Command	Description
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		
															x	Normal Stop	0 = Not Normal Stop 1 = Normal Stop
														x		Start[1]	0 = Not Start 1 = Start
													x			Jog 1	0 = Not Jog using [Jog Speed 1] 1 = Jog using [Jog Speed 1]
												x				Clear Fault[2]	0 = Not Clear Fault 1 = Clear Fault
										x	x					Unipolar Direction	00 = No Command 01 = Forward Command 10 = Reverse Command 11 = Hold Direction Control
									x							Reserved	
								x								Jog 2	0 = Not Jog using [Jog Speed 2] 1 = Jog using [Jog Speed 2]
							x									Current Limit Stop	0 = Not Current Limit Stop 1 = Current Limit Stop
						x										Coast Stop	0 = Not Coast to Stop 1 = Coast to Stop
					x											Reserved	
				x												Reserved	
			x													Spd Ref Sel0	
		x														Spd Ref Sel1	
	x															Spd Ref Sel2	
x																Reserved	

Bits				
2	1	0		
0	0	0	=	Spd Ref A
0	0	1	=	Spd Ref B
0	1	0	=	Preset 2
0	1	1	=	Ref. 3 (Preset 3)
1	0	0	=	Ref. 4 (Preset 4)
1	0	1	=	Ref. 5 (Preset 5)
1	1	0	=	Ref. 6 (Preset 6)
1	1	1	=	Ref. 7 (Preset 7)

(1) A Not Stop condition (logic bit 0 = 0, logic bit 8 = 0, and logic bit 9 = 0) must first be present before a 1 = Start condition will start the drive.

(2) To perform this command, the value must switch from “0” to “1.”

Logic Status Word

Logic Bits																Status	Description
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		
															x	Active	0 = Not Active 1 = Active
														x		Running	0 = Not Running 1 = Running
													x			Command Direction	0 = Reverse 1 = Forward
												x				Actual Direction	0 = Reverse 1 = Forward
											x					Accel	0 = Not Accelerating 1 = Accelerating
										x						Decel	0 = Not Decelerating 1 = Decelerating
									x							Jogging	0 = Not Jogging 1 = Jogging
								x								Faulted	0 = No Fault 1 = Fault
							x									Alarm	0 = No Alarm 1 = Alarm
						x										Flash Mode	0 = Not in Flash Mode 1 = In Flash Mode
					x											Ready	0 = Not Ready to Run 1 = Ready to Run
				x												At Limit(1)	0 = Not At Limit 1 = At Limit
			x													Tach Loss Sw	0 = Not Tach Loss Sw 1 = Tach Loss Sw
		x														At Zero Spd	0 = Not At Zero Speed 1 = At Zero Speed
	x															At Setpt Spd	0 = Not At Setpoint Speed 1= At Setpoint Speed
x																Enable On	0 = Not Enabled 1 = Enable On

(1) See Par 304 - [Limit Status] in the PowerFlex 700S drive for a description of the limit status conditions.

Output Devices

Common mode cores are internal to the drive. For information on output devices such as output contactors, cable terminators and output reactors refer to the *PowerFlex Reference Manual, Vol. 2*.

Drive, Fuse & Circuit Breaker Ratings

The tables on the following pages provide PowerFlex 700S drive ratings (including continuous, 1 minute, and 3 second) and recommended AC input line fuses and circuit breakers.

Fuse Size

Fuse sizes are the recommended minimum size based on 40° C ambient, 75° C wiring and U.S. N.E.C. Other country, state or local codes may require different fuse/circuit breaker ratings.

Fuse Type

The recommend fuse type is listed below. If available current ratings do not match the tables provided, the fuse rating that exceeds the drive continuous rating should be chosen.

- IEC

  BS88 (British Standard) Parts 1 & 2 [1], EN60269-1, Parts 1 & 2, type go or equivalent should be used for these drives.

- UL

  UL requirements specify that UL Class CC, T or J fuses must be used for all drives in this section [2].

[1] Typical designations include, but may not be limited to the following; Ora 1 & 2:AC, AD, BC, BD, CD, DD, ED, EFS, EF, FF, FG, GF, GG, GH

[2] Typical designations include; Type CC - KTK, FNQ-R
Type J - JKS, LPJ
Type T - JJS, JJN

208 Volt AC Input Protection Devices, Frames 1- 6 *(See page A-15 for Notes)*

Drive Catalog Number	Frame	kW Rating		Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker (3)	Motor Circuit Protector (4)	140M Motor Starter with Adjustable Current Range (5)(6)				Power Dissipation
		ND	*HD*	*Amps*	*kVA*	*Cont.*	*1 Min.*	*3 Sec.*	*Min.(1)*	*Max.(2)*	*Min.(1)*	*Max.(2)*	*Max.(10)*	*Max.(10)*	*Available Catalog Numbers (7)*				*Watts*
20DB2P2	1	0.5	0.33	1.9	0.7	2.2	2.8	3.8	3	6	3	10	15	3	140M-C2E-B25	140M-D8E-B25	–	–	NA
20DB4P2	1	0.75	0.37	3.7	1.3	4.8	5.6	7.0	6	10	6	17.5	15	7	140M-C2E-B63	140M-D8E-B63	–	–	NA
20DB6P8	1	1.5	0.75	6.8	2.4	7.8	10.4	13.8	10	15	10	30	30	15	140M-C2E-C10	140M-D8E-C10	140M-F8E-C10	–	NA
20DB9P6	1	2.2	1.5	9.5	3.4	11	12.1	17	12	20	12	40	40	15	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	–	NA
20DB015	1	4	2.2	15.7	5.7	17.5	19.3	26.3	20	35	20	70	70	30	140M-C2E-C20	140M-D8E-C20	140M-F8E-C20	–	NA
20DB022	1	5.5	4	23.0	8.3	25.3	27.8	38	30	50	30	100	100	30	140M-C2E-C25	140M-D8E-C25	140M-F8E-C25	140M-CMN-2500	NA
20DB028	2	7.5	5.5	29.6	10.7	32.2	38	50.6	40	70	40	125	125	50	–	–	140M-F8E-C32	140M-CMN-4000	NA
20DB042	3	11	7.5	44.5	16.0	48.3	53.1	72.5	60	100	60	175	175	70	–	–	140M-F8E-C45	140M-CMN-6300	NA
20DB052	3	15	11	51.5	17.1	56	64	86	80	125	80	200	200	100	–	–	–	140M-CMN-6300	NA
20DB070	4	18.5	15	72	25.9	78.2	86	117.3	90	175	90	300	300	100	–	–	–	140M-CMN-9000	NA
20DB080	4	22	18.5	84.7	30.5	92	117.3	156.4	110	200	110	350	350	150	–	–	–	140M-CMN-9000	NA
20DB104	5	30	–	113	40.7	120	132	175	150	250	150	475	350	150	–	–	–	–	NA
		–	22	84.7	30.5	92	138	175	125	200	125	350	300	150	–	–	–	140M-CMN-9000	NA
20DB130	5	30	–	122	44.1	130	143	175	175	275	175	500	375	250	–	–	–	–	NA
		–	30	98	35.3	104	156	175	125	225	125	400	300	150	–	–	–	–	NA
20DB154	6	45	–	167	60.1	177	195	266	225	350	225	500	500	250	–	–	–	–	NA
		–	37	141	50.9	150	225	300	200	300	200	500	450	250	–	–	–	–	NA
20DB192	6	55	–	208	75.0	221	243	308	300	450	300	600	600	400	–	–	–	–	NA
		–	45	167	60.1	177	266	308	225	350	225	500	500	250	–	–	–	–	NA
20DB260	6	66	–	255	91.9	260	286	390	250	450	250	600	600	400	–	–	–	–	NA
		–	55	199	71.7	205	305	410	350	550	350	750	750	400	–	–	–	–	NA

240 Volt AC Input Protection Devices, Frames 1 - 6 *(See page A-15 for Notes)*

Drive Catalog Number	Frame	HP Rating		Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker (3)	Motor Circuit Protector (4)	140M Motor Starter with Adjustable Current Range (5)(6)				Power Dissipation
		ND	HD	Amps	kVA	Cont.	1 Min.	3 Sec.	Min. (1)	Max. (2)	Min. (1)	Max. (2)	Max. (10)	Max. (10)	Available Catalog Numbers (7)				Watts
20DB2P2	1	0.5	0.33	1.7	0.7	2.2	2.4	3.3	3	6	3	10	15	3	140M-C2E-B25	140M-D8E-B25	–	–	NA
20DB4P2	1	1	0.75	3.3	1.4	4.2	4.8	6.4	5	8	5	15	15	7	140M-C2E-B63	140M-D8E-B63	–	–	NA
20DB6P8	1	2	1.5	5.9	2.4	6.8	9	12	10	15	10	25	25	15	140M-C2E-C10	140M-D8E-C10	140M-F8E-C10	–	NA
20DB9P6	1	3	2	8.3	3.4	9.6	10.6	14.4	12	20	12	35	35	15	140M-C2E-C10	140M-D8E-C10	140M-F8E-C10	–	NA
20DB015	1	5	3	13.7	5.7	15.3	16.8	23	20	30	20	60	60	30	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	–	NA
20DB022	1	7.5	5	19.9	8.3	22	24.2	33	25	50	25	80	80	30	140M-C2E-C25	140M-D8E-C25	140M-F8E-C25	140M-CMN-2500	NA
20DB028	2	10	7.5	25.7	10.7	28	33	44	35	60	35	100	100	50	–	–	140M-F8E-C32	140M-CMN-4000	NA
20DB042	3	15	10	38.5	16.0	42	46.2	63	50	90	50	150	150	50	–	–	140M-F8E-C45	140M-CMN-6300	NA
20DB052	3	20	15	47.7	19.8	52	63	80	60	100	60	200	200	100	–	–	–	140M-CMN-6300	NA
20DB070	4	25	20	64.2	26.7	70	78	105	90	150	90	275	275	100	–	–	–	140M-CMN-9000	NA
20DB080	4	30	25	73.2	30.5	80	105	136	100	180	100	300	300	100	–	–	–	140M-CMN-9000	NA
20DB104	5	40	–	98	40.6	104	115	175	125	225	125	400	300	150	–	–	–	–	NA
		–	30	73	30.5	80	120	160	100	175	100	300	300	100	–	–	–	140M-CMN-9000	NA
20DB130	5	50	–	122	50.7	130	143	175	175	275	175	500	375	250	–	–	–	–	NA
		–	40	98	40.6	104	156	175	125	225	125	400	300	150	–	–	–	–	NA
20DB154	6	60	–	145	60.1	154	169	231	200	300	200	600	450	250	–	–	–	–	NA
		–	50	122	50.7	130	195	260	175	275	175	500	375	250	–	–	–	–	NA
20DB192	6	75	–	180	74.9	192	211	288	225	400	225	600	575	250	–	–	–	–	NA
		–	60	145	60.1	154	231	308	200	300	200	600	450	250	–	–	–	–	NA
20DB260	6	100	–	255	91.9	260	286	390	250	450	250	600	600	400	–	–	–	–	NA
		–	75	199	71.7	205	305	410	350	550	350	750	750	400	–	–	–	–	NA

400 Volt AC Input Protection Devices, Frames 1 - 6 *(See page A-15 for Notes)*

Drive Catalog Number	Frame	kW Rating		Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker (3)	Motor Circuit Protector (4)	140M Motor Starter with Adjustable Current Range (5)(6)			Power Dissipation
		ND	HD	Amps	kVA	Cont.	1 Min.	3 Sec.	Min. (1)	Max. (2)	Min. (1)	Max. (2)	Max. (10)	Max. (10)	Available Catalog Numbers (7)			Watts
20DD2P1	1	0.75	0.55	1.8	1.3	2.1	2.4	3.2	3	6	3	8	15	3	140M-C2E-B25	140M-D8E-B25	–	NA
20DD3P4	1	1.5	0.75	3.2	2.2	3.5	4.5	6.0	6	7	6	12	15	7	140M-C2E-B40	140M-D8E-B40	–	NA
20DD5P0	1	2.2	1.5	4.6	3.2	5.0	5.5	7.5	6	10	6	20	20	7	140M-C2E-B63	140M-D8E-B63	–	NA
20DD8P0	1	4	2.2	7.9	5.5	8.7	9.9	13.2	15	17.5	15	30	30	15	140M-C2E-C10	140M-D8E-C10	140M-F8E-C10	NA
20DD011	1	5.5	4	10.8	7.5	11.5	13	17.4	15	25	15	45	45	15	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	NA
20DD014	1	7.5	5.5	14.4	10.0	15.4	17.2	23.1	20	30	20	60	60	20	140M-C2E-C20	140M-D8E-C20	140M-F8E-C20	NA
20DD022	1	11	7.5	20.6	14.3	22	24.2	33	30	45	30	80	80	30	140M-C2E-C25	140M-D8E-C25	140M-F8E-C25	NA
20DD027	2	15	11	28.4	19.7	30	33	45	35	60	35	120	120	50	–	–	140M-F8E-C32	NA
20DD034	2	18.5	15	35.0	24.3	37	45	60	45	80	45	125	125	50	–	–	140M-F8E-C45	NA
20DD040	3	22	18.5	40.7	28.2	43	56	74	60	90	60	150	150	60	–	–	–	NA
20DC052	3	30	22	53	36.7	56	64	86	70	125	70	200	200	100	–	–	–	NA
20DD065	3	37	30	68.9	47.8	72	84	112	90	150	90	250	250	100	–	–	–	NA
20DD077 (8)	4	45	–	81.4	56.4	85	94	128	110	200	110	300	300	150	–	–	–	NA
		–	37	68.9	47.8	72	108	144	90	175	90	275	300	100	–	–	–	NA
20DD096	5	55	–	100.5	69.6	105	116	158	125	225	125	400	300	150	–	–	–	NA
		–	45	81.4	56.4	85	128	170	110	175	110	300	300	150	–	–	–	NA
20DD125	5	55	–	121.1	83.9	125	138	163	150	275	150	500	375	250	–	–	–	NA
		–	45	91.9	63.7	96	144	168	125	200	125	375	375	150	–	–	–	NA
20DD156	6	90	–	164	126	170	187	255	250	375	250	600	500	250	–	–	–	NA
		–	75	136	103	140	210	280	200	300	200	550	400	250	–	–	–	NA
20DD180 (9)	6	110	–	199	148	205	220	289	250	450	250	600	600	400	–	–	–	NA
		–	90	164	126	170	255	313	250	375	250	600	500	250	–	–	–	NA
20DD248	6	132	–	255	177	260	286	390	350	550	350	750	750	400	–	–	–	NA
		–	110	199	138	205	308	410	250	450	250	600	600	400	–	–	–	NA

400 Volt AC Input Protection Devices, Frames 9 - 11 *(See page A-15 for Notes)*

Drive Catalog Number	Frame	kW Rating		Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker (3)	Motor Circuit Protector (4)	140M Motor Starter with Adjustable Current Range (5)(6)			Power Dissipation
		ND	HD	Amps	kVA	Cont.	1 Min.	3 Sec.	Min. (1)	Max. (2)	Min. (1)	Max. (2)	Max. (10)	Max. (10)	Available Catalog Numbers (7)			Watts
20DD261	9	132	-	256	171	261	287	410	325	500	325	700	700	400	–	–	–	NA
		-	110	201	139	205	308	410	250	400	250	550	600	400	–	–	–	NA
20DD300	9	160	-	294	204	300	330	450	375	675	375	800	800	400	–	–	–	NA
		-	132	240	166	245	368	490	325	500	325	650	700	400	–	–	–	NA
20DD385	10	200	-	377	261	385	424	600	500	800	500	1000	800	800	–	–	–	NA
		-	160	294	204	300	450	600	375	675	375	800	800	600	–	–	–	NA
20DD460	10	250	-	451	312	460	506	770	575	900	575	1200	1200	800	–	–	–	NA
		-	200	377	261	385	578	770	500	800	500	1000	800	800	–	–	–	NA
20DD500	10	250	-	490	339	500	550	750	625	1100	625	1400	1200	800	–	–	–	NA
		-	200	411	285	420	630	840	525	1000	525	1000	1200	800	–	–	–	NA
20DD590	11	315	-	590	408	590	649	1040	750 (1 per phs) 375 (2 per phs)	1300 (1 per phs) 600 (2 per phs)	750 (1 per phs) 375 (2 per phs)	1700 (1 per phs) 850 (2 per phs)	1600	1200	–	–	–	NA
		-	250	520	360	520	780	1040	650 (1 per phs) 325 (2 per phs)	1100 (1 per phs) 550 (2 per phs)	650 (1 per phs) 325 (2 per phs)	1500 (1 per phs) 750 (2 per phs)	1200	800	–	–	–	NA
20DD650	11	355	-	650	450	650	715	1180	900 (1 per phs) 450 (2 per phs)	1300 (1 per phs) 650 (2 per phs)	900 (1 per phs) 450 (2 per phs)	1700 (1 per phs) 850 (2 per phs)	1600	1200	–	–	–	NA
		-	315	590	408	590	885	1180	750 (1 per phs) 375 (2 per phs)	1300 (1 per phs) 650 (2 per phs)	750 (1 per phs) 375 (2 per phs)	1700 (1 per phs) 850 (2 per phs)	1600	1200	–	–	–	NA
20DD730	11	400	-	730	506	730	803	1095	1000 (1 per phs) 500 (2 per phs)	1500 (1 per phs) 750 (2 per phs)	1000 (1 per phs) 500 (2 per phs)	2000 (1 per phs) 1000 (2 per phs)	2000	2000	–	–	–	NA
		-	355	650	450	650	945	1260	900 (1 per phs) 450 (2 per phs)	1300 (1 per phs) 650 (2 per phs)	900 (1 per phs) 450 (2 per phs)	1700 (1 per phs) 850 (2 per phs)	1600	1200	–	–	–	NA

480 Volt AC Input Protection Devices, Frames 1 - 6 *(See page A-15 for Notes)*

Drive Catalog Number	Frame	HP Rating		Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker[3]	Motor Circuit Protector[4]	140M Motor Starter with Adjustable Current Range[5][6]				Power Dissipation
		ND	HD	Amps	kVA	Cont.	1 Min.	3 Sec.	Min.[1]	Max.[2]	Min.[1]	Max.[2]	Max.[10]	Max.[10]	Available Catalog Numbers[7]				Watts
20DD2P1	1	1	0.75	1.6	1.4	2.1	2.4	3.2	3	6	3	8	15	3	140M-C2E-B25	–	–	–	103
20DD3P4	1	2	1.5	2.6	2.2	3.4	4.5	6.0	4	8	4	12	15	7	140M-C2E-B40	140M-D8E-B40	–	–	117
20DD5P0	1	3	2	3.9	3.2	5.0	5.5	7.5	6	10	6	20	20	7	140M-C2E-B63	140M-D8E-B63	–	–	135
20DD8P0	1	5	3	6.9	5.7	8.0	8.8	12	10	15	10	30	30	15	140M-C2E-C10	140M-D8E-C10	140M-F8E-C10	–	210
20DD011	1	7.5	5	9.5	7.9	11	12.1	16.5	15	20	15	40	40	15	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	–	243
20DD014	1	10	7.5	12.5	10.4	14	16.5	22	17.5	30	17.5	50	50	20	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	–	271
20DD022	1	15	10	19.9	16.6	22	24.2	33	25	50	25	80	80	30	140M-C2E-C25	140M-D8E-C25	140M-F8E-C25	140-CMN-2500	389
20DD027	2	20	15	24.8	20.6	27	33	44	35	60	35	100	100	50	–	–	140M-F8E-C32	140-CMN-4000	467
20DD034	2	25	20	31.2	25.9	34	40.5	54	40	70	40	125	125	50	–	–	140M-F8E-C45	140-CMN-4000	519
20DD040	3	30	25	36.7	30.5	40	51	68	50	90	50	150	150	50	–	–	140M-F8E-C45	140-CMN-4000	543
20DD052	3	40	30	47.7	39.7	52	60	80	60	110	60	200	200	70	–	–	–	140M-CMN-6300	708
20DD065	3	50	40	59.6	49.6	65	78	104	80	125	80	250	250	100	–	–	–	140M-CMN-9000	NA
20DD077	4	60	–	72.3	60.1	77	85	116	100	170	100	300	300	100	–	–	–	140M-CMN-9000	NA
		–	50	59.6	49.6	65	98	130	80	125	80	250	250	100	–	–	–	140M-CMN-9000	NA
20DD096	5	75	–	90.1	74.9	96	106	144	125	200	125	350	350	125	–	–	–	–	NA
		–	60	72.3	60.1	77	116	154	100	170	100	300	300	100	–	–	–	140M-CMN-9000	NA
20DD125	5	100	–	117	97.6	125	138	163	150	250	150	500	375	150	–	–	–	–	NA
		–	75	90.1	74.9	96	144	168	125	200	125	350	350	125	–	–	–	–	NA
20DD156	6	125	–	147	122	156	172	233	200	350	200	600	450	250	–	–	–	–	NA
		–	100	131	109	125	188	250	175	250	175	500	375	250	–	–	–	–	NA
20DD180	6	150	–	169	141	180	198	270	225	400	225	600	500	250	–	–	–	–	NA
		–	125	147	122	156	234	312	200	350	200	600	450	250	–	–	–	–	NA
20DD248	6	200		233	194	248	273	372	300	550	300	700	700	400	–	–	–	–	NA
			150	169	141	180	270	360	225	400	225	600	500	250	–	–	–	–	NA

480 Volt AC Input Protection Devices, Frames 9 - 11 *(See page A-15 for Notes)*

Drive Catalog Number	Frame	HP Rating		Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker [3]	Motor Circuit Protector [4]	140M Motor Starter with Adjustable Current Range [5][6]				Power Dissipation
		ND	HD	Amps	kVA	Cont.	1 Min.	3 Sec.	Min. [1]	Max. [2]	Min. [1]	Max. [2]	Max. [10]	Max. [10]	Available Catalog Numbers [7]				Watts
20DD261	9	200	-	245	204	261	287	410	325	500	325	700	700	400	–	–	–	–	2700
		-	150	193	160	205	308	410	250	400	250	550	600	400	–	–	–	–	2700
20DD300	9	250	-	282	234	300	330	450	375	675	375	800	800	400	–	–	–	–	3100
		-	200	230	191	245	368	490	325	500	325	650	700	400	–	–	–	–	3100
20DD385	10	300	-	362	301	385	424	600	500	800	500	1000	800	800	–	–	–	–	4700
		-	250	282	234	300	450	600	375	675	375	800	800	600	–	–	–	–	4700
20DD460	10	350	-	432	359	460	506	770	575	900	575	1200	1200	800	–	–	–	–	5500
		-	300	362	301	385	578	770	500	800	500	1000	800	800	–	–	–	–	5500
20DD500	10	450	-	469	390	500	550	750	625	1100	625	1400	1200	800	–	–	–	–	6400
		-	350	394	328	420	630	840	525	1000	525	1000	1200	800	–	–	–	–	6400
20DD590	11	500	-	590	490	590	649	956	750 (1 per phs) 375 (2 per phs)	1300 (1 per phs) 600 (2 per phs)	750 (1 per phs) 375 (2 per phs)	1700 (1 per phs) 850 (2 per phs)	1600	1200	–	–	–	–	NA
		-	450	520	532	520	780	956	650 (1 per phs) 325 (2 per phs)	1100 (1 per phs) 550 (2 per phs)	650 (1 per phs) 325 (2 per phs)	1500 (1 per phs) 750 (2 per phs)	1200	800	–	–	–	–	NA
20DD650	11	500	-	650	540	650	715	1062	900 (1 per phs) 450 (2 per phs)	1300 (1 per phs) 650 (2 per phs)	900 (1 per phs) 450 (2 per phs)	1700 (1 per phs) 850 (2 per phs)	1600	1200	–	–	–	–	NA
		-	500	590	490	590	885	1062	750 (1 per phs) 375 (2 per phs)	1300 (1 per phs) 650 (2 per phs)	750 (1 per phs) 375 (2 per phs)	1700 (1 per phs) 850 (2 per phs)	1600	1200	–	–	–	–	NA
20DD730	11	600	-	730	607	730	803	1095	1000 (1 per phs) 500 (2 per phs)	1500 (1 per phs) 750 (2 per phs)	1000 (1 per phs) 500 (2 per phs)	2000 (1 per phs) 1000 (2 per phs)	2000	2000	–	–	–	–	NA
		-	500	650	540	650	975	1170	900 (1 per phs) 450 (2 per phs)	1300 (1 per phs) 650 (2 per phs)	900 (1 per phs) 450 (2 per phs)	1700 (1 per phs) 850 (2 per phs)	1600	1200	–	–	–	–	NA

600 Volt AC Input Protection Devices, Frames 1 - 6 *(See page A-15 for Notes)*

Drive Catalog Number	Frame	HP Rating		PWM Freq.	Temp.	Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker (3)	Motor Circuit Protector (4)	140M Motor Starter with Adjustable Current Range (5)(6)				Power Dissipation
		ND	HD	kHz	°C	Amps	kVA	Cont.	1 Min.	3 Sec.	Min. (1)	Max. (2)	Min. (1)	Max. (2)	Max. (10)	Max. (10)	Available Catalog Numbers (7)				Watts
20DE1P7	1	1	0.5	4	50	1.3	1.4	1.7	2	2.6	2	4	2	6	15	3	M-C2E-B16	–	–	–	NA
20DE2P7	1	2	1	4	50	2.1	2.1	2.7	3.6	4.8	3	6	3	10	15	3	M-C2E-B25	–	–	–	NA
20DE3P9	1	3	2	4	50	3.0	3.1	3.9	4.3	5.9	6	9	6	15	15	7	M-C2E-B40	M-D8E-B40	–	–	NA
20DE6P1	1	5	3	4	50	5.3	5.5	6.1	6.7	9.2	9	12	9	20	20	15	M-C2E-B63	M-D8E-B63	–	–	NA
20DE9P0	1	7.5	5	4	50	7.8	8.1	9	9.9	13.5	10	20	10	35	30	15	M-C2E-C10	M-D8E-C10	M-F8E-C10	–	NA
20DE011	1	10	7.5	4	50	9.9	10.2	11	13.5	18	15	25	15	40	40	15	M-C2E-C10	M-D8E-C10	M-F8E-C10	–	NA
20DE017	1	15	10	4	50	15.4	16.0	17	18.7	25.5	20	40	20	60	50	20	M-C2E-C16	M-D8E-C16	M-F8E-C16	–	NA
20DE022	2	20	15	4	50	20.2	21.0	22	25.5	34	30	50	30	80	80	30	M-C2E-C25	M-D8E-C25	M-F8E-C25	-CMN-2500	NA
20DE027	2	25	20	4	50	24.8	25.7	27	33	44	35	60	35	100	100	50	–	–	M-F8E-C25	-CMN-2500	NA
20DE032	3	30	25	4	50	29.4	30.5	32	40.5	54	40	70	40	125	125	50	–	–	M-F8E-C32	-CMN-4000	NA
20DE041	3	40	30	4	50	37.6	39.1	41	48	64	50	90	50	150	150	100	–	–	M-F8E-C45	-CMN-4000	NA
20DE052	3	50	40	4	50	47.7	49.6	52	61.5	82	60	110	60	200	200	100	–	–	–	M-CMN-6300	NA
20DE062	4	60	50	2	50	58.2	60.5	62	78	104	80	125	80	225	225	100	–	–	–	M-CMN-6300	NA
20DE077	5	75	–	2	50	72.3	75.1	77	85	116	90	150	90	300	300	100	–	–	–	M-CMN-9000	NA
		–	60	2	50	58.2	60.5	63	94	126	90	125	90	250	250	100	–	–	–	M-CMN-6300	NA
20DE099	5	100	–	2	40	92.9	96.6	99	109	126	125	200	125	375	375	150	–	–	–	–	NA
		–	75	2	40	72.3	75.1	77	116	138	100	175	100	300	300	100	–	–	–	M-CMN-9000	NA
20DE125	6	125	–	2	50	117	122	125	–	–	150	250	150	375	375	250	–	–	–	–	NA
		–	100	2	50	92.9	96.6	99	–	–	125	200	125	375	375	150	–	–	–	–	NA
20DE144	6	150	–	2		135	141	144	–	–	175	300	175	400	400	250	–	–	–	–	NA
		–	125	2		117	122	125	–	–	150	275	150	375	375	250	–	–	–	–	NA

690 Volt AC Input Protection Devices *(See Notes below)*

Drive Catalog Number	Frame	kW Rating		PWM Freq.	Temp.	Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker [3]	Motor Circuit Protector [4]	Power Dissipation
		ND	*HD*	*kHz*	*°C*	*Amps*	*kVA*	*Cont.*	*1 Min.*	*3 Sec.*	*Min.[1]*	*Max.[2]*	*Min.[1]*	*Max.[2]*	*Max.[10]*	*Max.[10]*	*Watts*
20DF052	5	45	–	4	50	46.9	56.1	52	57	78	60	110	60	175	175	–	NA
		–	37.5	4	50	40.1	48.0	46	69	92	50	90	50	150	150	–	NA
20DF060	5	55	–	4	50	57.7	68.9	60	66	90	80	125	80	225	225	–	NA
		–	45	4	50	46.9	56.1	52	78	104	60	110	60	175	175	–	NA
20DF082	5	75	–	2	50	79.0	94.4	82	90	120	100	200	100	375	375	–	NA
		–	55	2	50	57.7	68.9	60	90	123	80	125	80	225	225	–	NA
20DF098	5	90	–	2	40	94.7	113	98	108	127	125	200	125	375	375	–	NA
		–	75	2	40	79.0	94.4	82	123	140	100	200	100	375	375	–	NA
20DF119	6	110	–	2	50	115	137	119	131	179	150	250	150	400	–	–	NA
		–	90	2	50	94.7	113	98	147	196	125	200	125	375	–	–	NA
20DF142	6	132	–	2	50	138	165	142	156	213	175	300	175	450	–	–	NA
		–	110	2	50	115	137	119	179	238	150	250	150	400	–	–	NA

Notes:

(1) Minimum protection device size is the lowest rated device that supplies maximum protection without nuisance tripping.

(2) Maximum protection device size is the highest rated device that supplies drive protection. For US NEC, minimum size is 125% of motor FLA. Ratings shown are maximum.

(3) Circuit Breaker - inverse time breaker. For US NEC, minimum size is 125% of motor FLA. Ratings shown are maximum.

(4) Motor Circuit Protector - instantaneous trip circuit breaker. For US NEC minimum size is 125% of motor FLA. Ratings shown are maximum.

(5) Bulletin 140M with adjustable current range should have the current trip set to the minimum range that the device will not trip.

(6) Manual Self-Protected (Type E) Combination Motor Controller, UL listed for 208 Wye or Delta, 240 Wye or Delta, 480Y/277 or 600Y/ 347. Not UL listed for use on 480V or 600V Delta/Delta systems.

(7) The AIC ratings of the Bulletin 140M Motor Protector may vary. See publication 140M-SG001.

(8) 20BC085 current rating is limited to 45 degrees C ambient.

(9) 20BC205 current rating is limited to 40 degrees C ambient.

(10) Maximum allowable rating by US NEC. Exact size must be chosen for each installation.

(11) These values are approximate.

(12) Frame 9 and up are measured at 2 kHz frequency.

540 Volt DC Input Protection Devices

Drive Catalog Number	Frame	HP Rating		DC Input Ratings		Output Amps			Fuse	Non-Time Delay Fuse[2]
		ND	*HD*	*Amps*	*kW*	*Cont.*	*1 Min.*	*3 Sec.*		
20DD014	1	10	7.5	14.7	9.5	15.4	16.5	22	30	HSJ25
20DD022	1	15	10	23.3	15.1	22	24.2	33	45	HSJ400
20DD027	2	20	15	28.9	18.8	30	33	44	60	HSJ50
20DD034	3	25	20	36.4	23.6	37	40.5	54	70	HSJ70
20DD040	3	30	25	42.9	27.8	43	51	68	80	HSJ90
20DD052	3	40	30	55.7	36.1	56	60	80	100	HSJ100
20DD065	3	50	40	69.7	45.4	72	78	104	150	HSJ125
20DD077	4	60	–	84.5	54.7	77	85	116	150	HSJ150
		–	50	67.9	45.4	65	98	130	150	HSJ150
20DJ096 [1]	5	55	–	105.3	68.3	105	116	158	200	HSJ175
		–	45	84.5	54.7	85	128	170	150	HSJ175
20DJ125 [1]	5	55	–	137.1	88.9	125	138	163	250	HSJ200
		–	45	105.3	68.3	96	144	168	200	HSJ200
20DJ156 [1]	6	90	–	171.2	110.9	170	187	255	300	HSJ350
		–	75	137.1	88.9	140	210	280	250	HSJ350
20DJ180 [1]	6	110	–	204.1	132.2	205	220	289	400	HSJ350
		–	90	171.2	110.9	170	255	313	300	HSJ350
20DJ248	6	132	–			260	286	390	550	HSJ400
		–	111			205	308	410	400	HSJ400
20DJ261	9	200	-	299	186	261	287	410	500	170M6608
		-	150	235	146	205	308	410	500	170M6608
20DJ300	9	250	-	343	213	300	330	500	630	170M6610
		-	200	281	174	245	368	490	630	170M6610
20DJ385	10	300	-	441	274	385	424	600	700	170M6611
		-	250	343	213	300	450	600	700	170M6611
20DJ460	10	350	-	527	327	460	506	770	900	170M6613
		-	300	441	274	385	578	770	900	170M6613
20DJ500	10	450	-	572	356	500	550	750	1000	170M6608
		-	350	481	299	420	630	840	1000	170M6608
20DJ590	11	500	-	676	420	590	649	956	630 (2 per phs)	170M6609
		-	450	595	370	520	780	956	630 (2 per phs)	170M6609

Drive Catalog Number	Frame	HP Rating		DC Input Ratings		Output Amps			Fuse	Non-Time Delay Fuse[2]
		ND	*HD*	*Amps*	*kW*	*Cont.*	*1 Min.*	*3 Sec.*		
20DJ650	11	500	-	744	463	650	715	1062	700 (2 per phs)	170M6610
		-	500	676	420	590	885	1062	700 (2 per phs)	170M6610
20DJ730	11	600	-	836	520	730	803	1095	700 (2 per phs)	170M6611
		-	500	744	463	650	975	1170	700 (2 per phs)	170M6611

(1) Also applies to "P" voltage class.
Fuses must be applied in the (+) leg and (-) leg of the DC Common Bus.

(2) The power source to Common Bus inverters must be derived from AC voltages 600V or less, as defined in NFPA70; Art 430-18 (NEC)
Battery supplies or MG sets are not included.
The following devices were validated to break current of the derived power DC Bus:
Disconnects: Allen-Bradley Bulletin No. 1494, 30 to 400 A; Bulletin No. 194, 30 to 400 A, or ABB: OESA, 600 & 800 A; OESL, all sizes.
Fuses: Bussmann Type JKS, all sizes;Type 170M, Case Sizes 1, 2 and 3, or Ferraz Shawmut Type HSJ, all sizes.
For any other devices, please contact the factory.

650 Volt DC Input Protection Devices

Drive Catalog Number	Frame	HP Rating		DC Input Ratings		Output Amps			Fuse	Non-Time Delay Fuse[2]
		ND	*HD*	*Amps*	*kW*	*Cont.*	*1 Min.*	*3 Sec.*		
20DD014	1	10	7.5	14.7	9.5	14	16.5	22	30	HSJ30
20DD022	1	15	10	23.3	15.1	22	24.2	33	45	HSJ40
20DD027	2	20	15	28.9	18.8	27	33	44	60	HSJ50
20DD034	2	25	20	36.4	23.6	34	40.5	54	70	HSJ60
20DD040	3	30	25	42.9	27.8	40	51	68	80	HSJ80
20DD052	3	40	30	55.7	36.1	52	60	80	100	HSJ90
20DD065	3	50	40	69.7	45.4	65	78	104	150	HSJ100
20DD077	4	60	–	84.5	54.7	77	85	116	150	HSJ150
		–	50	67.9	45.4	65	98	130	150	HSJ150
20DJ096[1]	5	75	–	105.3	68.3	96	106	144	200	HSJ175
		–	60	84.5	54.7	77	116	154	150	HSJ175
20DJ125 [1]	5	100	–	137.1	88.9	125	138	163	250	HSJ200
		–	75	105.3	68.3	96	144	168	200	HSJ200
20DJ156[1]	6	125	–	171.2	110.9	156	172	234	300	HSJ300
		–	100	137.1	88.9	125	188	250	250	HSJ300
20DJ180[1]	6	150	–	204.1	132.2	180	198	270	400	HSJ400
		–	125	171.2	110.9	156	234	312	300	HSJ400
20DJ248	6	200	–			248	273	372	550	HSJ400
		–	150			180	270	360	400	HSJ400
20DJ261	9	200	-	299	186	261	287	410	500	170M6608
		-	150	235	146	205	308	410	500	170M6608
20DJ300	9	250	-	343	213	300	330	500	630	170M6610
		-	200	281	174	245	368	490	630	170M6610
20DJ385	10	300	-	441	274	385	424	600	700	170M6611
		-	250	343	213	300	450	600	700	170M6611
20DJ460	10	350	-	527	327	460	506	770	900	170M6613
		-	300	441	274	385	578	770	900	170M6613
20DJ500	10	450	-	572	356	500	550	750	1000	170M6608
		-	350	481	299	420	630	840	1000	170M6608
20DJ590	11	500	-	676	420	590	649	956	630 (2 per phs)	170M6609
		-	450	595	370	520	780	956	630 (2 per phs)	170M6609
20DJ650	11	500	-	744	463	650	715	1062	700 (2 per phs)	170M6610
		‘	500	676	420	590	885	1062	700 (2 per phs)	170M6610
20DJ730	11	600	-	836	520	730	803	1095	700 (2 per phs)	170M6611
		-	500	744	463	650	975	1170	700 (2 per phs)	170M6611

(1) Also applies to "R" voltage class.
Fuses must be applied in the (+) leg and (-) leg of the DC Common Bus.

(2) The power source to Common Bus inverters must be derived from AC Voltages 600V or less, as defined in NFPA70; Art 430-18 (NEC).
Battery supplies or MG sets are not included
The following devices were validated to break current of the derived power DC Bus:
Disconnects: Allen-Bradley Bulletin No. 1494, 30 to 400 A; Bulletin No. 194, 30 to 400 A, or ABB: OESA, 600 & 800 A; OESL, all sizes
Fuses: Bussmann Type JKS, all sizes;Type 170M, Case Sizes 1, 2 and 3, or Ferraz Shawmut Type HSJ, all sizes.
For any other devices, please contact the factory.

List of Motors with Compatible Thermistor Ratings

Motor Type	Motor (kW)	Type (Catalog No.)[1]	Poles	Base Speed (RPM)	Voltage (Vrms)	Rate Current (Arms)	Ex. Current (Arms)	GD2 (Kg/m^2)
200 STD Motor	1.5	M-51027	4	1500	180	7.5	-	0.024
	2.2	M-51028	4	1500	180	11	-	0.045
	3.7	M-51001	4	1500	180	18	-	0.066
	3.7	M-51007-1	4	1500	180	18	-	0.066
	5.5	M-51002	4	1500	180	25	-	0.12
	5.5	M-51008-1	4	1500	180	25	-	0.12
	7.5	M-51003	4	1500	180	33	-	0.15
	7.5	M-51009-1	4	1500	180	33	-	0.15
	11	M-51004	4	1500	180	47	-	0.32
	11	M-51010-1	4	1500	180	47	-	0.32
	15	M-51005	4	1500	180	63	-	0.43
	15	M-51011-1	4	1500	180	63	-	0.43
	18.5	M-51012	4	1500	180	81	-	0.71
	18.5	M-51012-1	4	1500	180	81	-	0.71
	22	M-51013	4	1500	180	95	-	0.82
	22	M-51013-1	4	1500	180	95	-	0.82
	30	M-51050	4	1500	155	145	-	0.83
	37	M-51051	4	1500	155	183	-	1.1
	45	M-51052	4	1500	155	220	-	1.4
	55	M-51053	4	1500	155	265	-	2
	75	M-51054	4	1500	155	346	-	2.7
200 SVO Motor	0.75	M-51043	4	1500	140	5.3	-	0.0075
	1.5	M-51015	4	1500	140	11.4	-	0.0100
	2.2	M-51016	4	1500	140	15	-	0.0120
	3.7	M-51017	4	1500	140	24.5	-	0.0180
	5.5	M-51018	4	1500	140	34.8	-	0.0390
	7.5	M-51019	4	1500	140	44	-	0.0470
	11	M-51020	4	1500	140	67.1	-	0.0810
	15	M-51021	4	1500	140	80.7	-	0.1370
	22	M-51022	4	1500	140	120	-	0.2000
	30	M-51023	6	1000	155	176	-	0.5800
	37	M-51024	6	1000	155	210	-	0.7000
	55	M-51026	6	1000	135	334	-	1.1000
	55	M-51027	6	500	155	315	-	4.0000
400 STD Motor	1.5	MC-M2051	4	1500	320	4.7	2.045	-
	2.2	MC-M2052	4	1500	320	6.3	3.24	-
	3.7	MC-M2053	4	1500	320	10	5.25	-
	5.5	MC-M2054	4	1500	320	15.5	8.8	-
	7.5	MC-M2055	4	1500	320	20.5	11.25	-
	11	MC-M2056	4	1500	320	29	14.3	-
	15	MC-M2057	4	1500	320	37	16.4	-
	18.5	MC-M2058	4	1500	320	45	19.65	-
	22	MC-M2059	4	1500	320	53	23	-
	30	MC-M2060	4	1500	320	71	28.15	-
	37	MC-M2061	4	1500	320	85	29.7	-
	45	MC-M2062	4	1500	320	97	30.55	-
	55	MC-M2063	4	1500	320	121	-	-
	75	MC-M2064	4	1500	320	163	-	-
	90	MC-M2065	4	1500	320	188	-	-
	110	MC-M2066	4	1500	320	227	-	-
	132	MC-M2067	4	1500	320	280	-	-
	160	MC-M2068	4	1500	320	335	-	-
	200	MC-M2069	4	1500	320	375	-	-

Motor Type	Motor (kW)	Type (Catalog No.)(1)	Poles	Base Speed (RPM)	Voltage (Vrms)	Rate Current (Arms)	Ex. Current (Arms)	GD2 (Kg/m^2)
400 SVO Motor	1.5	MC-M20	4	1500	280	5.4	-	-
	2.2	MC-M20	4	1500	280	7.3	-	-
	3.7	MC-M20	4	1500	280	12.3	-	-
	5.5	MC-M20	4	1500	280	17.3	-	-
	7.5	MC-M20	4	1500	280	22	-	-
	11	MC-M20	4	1500	280	34	-	-
	15	MC-M20	4	1500	280	42	-	-
	22	MC-M20	4	1500	280	58.5	-	-
	22	MC-M20	4	1500	280	58.5	-	-
	30	MC-M20	6	1000	280	88	-	-
	37	MC-M20	6	1000	280	125	-	-

(1) Manufacturer, Reliance Electric-Japan, catalog number for ordering.

Spare Connectors

This section provides part numbers for "Customer-I/O" plugs (both Allen-Bradley numbers and connector manufacture numbers). This allows users to procure spare or replacement parts from Allen-Bradley or directly from the connector manufacturer.

Main Control Board

Phoenix Contact manufactures all four "Customer-I/O" connectors for the Main Control Board, according to Allen-Bradley specifications. Allen-Bradley specifies custom markings on standard Phoenix Contact plugs.

Connector	Allen-Bradley Number	Phoenix Contact Standard Number
TB1 - Row T	305334-Q01	MCV 1,5/13-ST3, 81 27 21 1
TB1 - Row B	305334-Q02	MCV 1,5/13-ST3, 81 27 21 1
TB2 - Row T	305335-Q01	MCV 1,5/13-ST3, 81 18 03 68 8
TB2 - Row B	305335-Q02	MCV 1,5/13-ST3, 81 18 03 68 8

High Resolution Encoder Interface Board

Weidmuller manufactures the "Customer-I/O" plug on the High Resolution Encoder Interface Board.

Connector	Allen-Bradley Number	Weidmuller Number
P1	S94262912	BL3.50/90/12BK

Resolver Interface Board

Weidmuller manufactures the "Customer-I/O" plug on the Resolver Interface Board.

Connector	Allen-Bradley Number	Weidmuller Number
P1	S94262908	BL3.50/90/8BK

Auxiliary Power Supply

The following are manufacturers of Auxiliary Power Supplies for 300V DC.

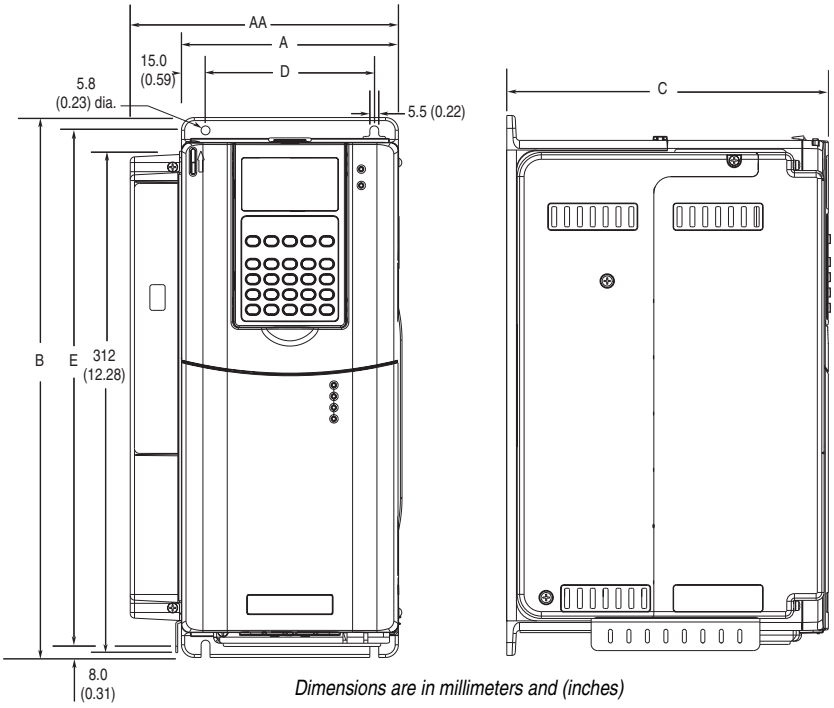
Frame Size	Manufacturer	Manufacturer Part Number
1-4	Phoenix Contact: 24V Input	29 49 82 6
	230V Input	29 49 81 3
1-6	Acopian	U300Y20

Dimensions

Table A.A PowerFlex 700S Frames

Frame	AC Input												DC Input			
	208		240		380 . . . 400V		480V		600V		690V		540V		650V	
	ND HP	HD HP	ND HP	HD HP	ND kW	HD kW	ND HP	HD HP	ND HP	HD HP	ND HP	HD HP	ND HP	HD HP	ND HP	HD HP
1	0.75	0.37	1.0	0.75	0.75	0.55	1	0.75	1	0.5	–	–	–	–	–	–
	1.5	0.75	2.0	1.5	1.5	0.75	2	1.5	2	1	–	–	–	–	–	–
	2.2	1.5	3.0	2.0	2.2	1.5	3	2	3	2	–	–	–	–	–	–
	4.0	2.2	5.0	3.0	4.0	2.2	5	3	5	3	–	–	–	–	–	–
	5.5	4.0	7.5	5.0	5.5	4.0	7.5	5	7.5	5	–	–	–	–	–	–
	–	–	–	–	7.5	5.5	10	7.5	10	7.5	–	–	–	–	–	–
	–	–	–	–	11	7.5	15	10	15	10	–	–	–	–	–	–
2	7.5	5.5	10	7.5	15	11	20	15	20	15	–	–	–	–	–	–
	–	–			18.5	15	25	20	25	20	–	–	–	–	–	–
3	11	7.5	15	10	22	18.5	30	25	30	25	–	–	–	–	–	–
	15	11	20	15	30	22	40	30	40	30	–	–	–	–	–	–
	–	–	–	–	37	30	50	40	50	40	–	–	–	–	–	–
4	18.5	15	25	20	45	37	60	50	60	50	–	–	–	–	–	–
	22	18.5	30	25	–	–	–	–	–	–			–	–	–	–
5	30	22	40	30	55	45	75	60	75	60	75	55	55	45	75	60
	30	30	50	40	55	45	100	75	100	75	90	75	55	45	75	60
	–	–	–	–	–	–	–	–	–	–	–	–	55	45	100	75
	–	–	–	–	–	–	–	–	–	–	–	–	55	45	100	75
6	45	37	60	50	90	75	125	100	125	100	110	90	90	75	125	100
	55	45	75	60	110	90	150	125	150	125	132	110	90	75	125	100
	66	55	100	75	132	110	200	150	–	–	–	–	110	90	150	125
	–	–	–	–	–	–	–	–	–	–	–	–	110	90	150	125
	–	–	–	–	–	–	–	–	–	–	–	–	132	110	200	150
	–	–	–	–	–	–	–	–	–	–	–	–	132	110	200	150
9	–	–	–	–	132	110	200	150	150	150	160	132	–	–	–	–
	–	–	–	–	160	130	250	200	200	150	200	160	–	–	–	–
10	–	–	–	–	200	160	300	250	250	200	250	200	–	–	–	–
	–	–	–	–	250	200	350	300	350	250	315	250	–	–	–	–
	–	–	–	–	250	250	450	350	400	350	355	315	–	–	–	–
	–	–	–	–	–	–	–	–	450	350	400	315	–	–	–	–
11	–	–	–	–	315	250	500	450	450	400	450	355	–	–	–	–
	–	–	–	–	355	315	500	500	500	450	500	450	–	–	–	–
	–	–	–	–	400	355	600	500	600	500	560	500	–	–	–	–

Figure 2 PowerFlex 700S Frame 1-3 *(Frame 1 Shown)*



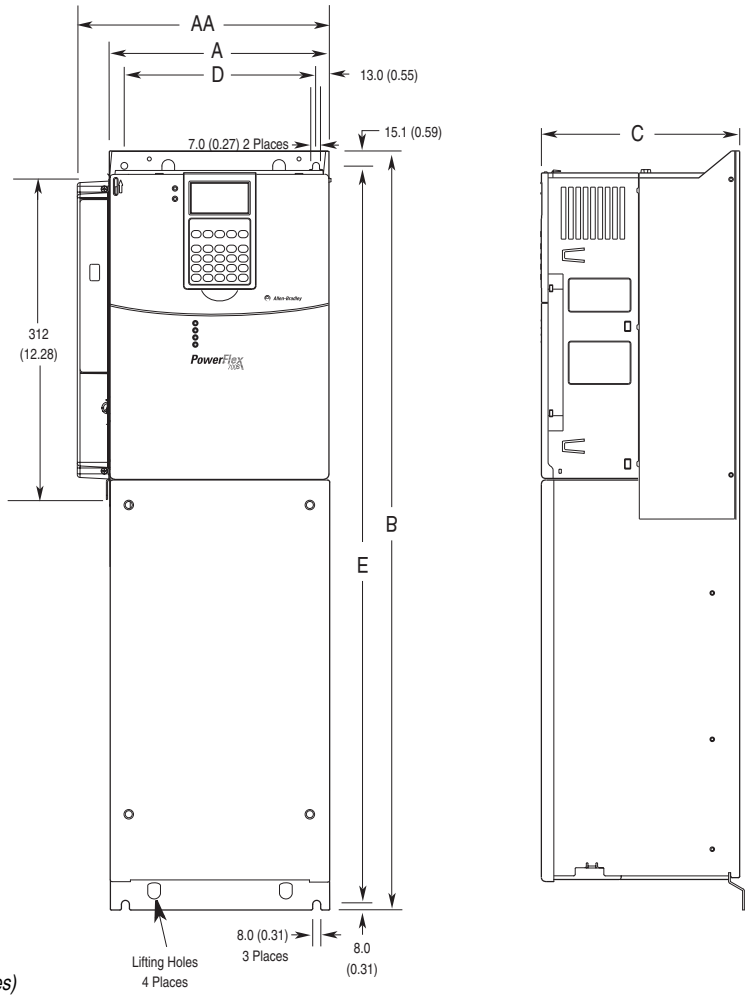
Dimensions are in millimeters and (inches)

Frame[1]	*Slim* **A**	*Expanded* **AA**	**B**	**C**	**D**	**E**	**Weight**[2] *kg (lbs.)*	
							Drive	**Drive & Packaging**
1	135.0 (5.31)	166.9 (6.57)	336.0 (13.23)	200.0 (7.87)	105.0 (4.13)	320.0 (12.60)	7.03 (15.5)	9.98 (22)
2	222.0 (8.74)	253.9 (9.99)	342.5 (13.48)	200.0 (7.87)	192.0 (7.56)	320.0 (12.60)	12.52 (27.6)	15.20 (33.5)
3	222.0 (8.74)	253.9 (9.99)	517.5 (20.37)	200.0 (7.87)	192.0 (7.56)	500.0 (19.69)	18.55 (40.9)	22.68 (50)

(1) Refer to Table A.A for frame information.

(2) Weights include HIM, DriveLogix controller with ControlNet daughtercard, Hi-Resolution Encoder Option, and 20-COMM-C ControlNet adapter.

Figure 3 PowerFlex 700S Frame 4 Dimensions



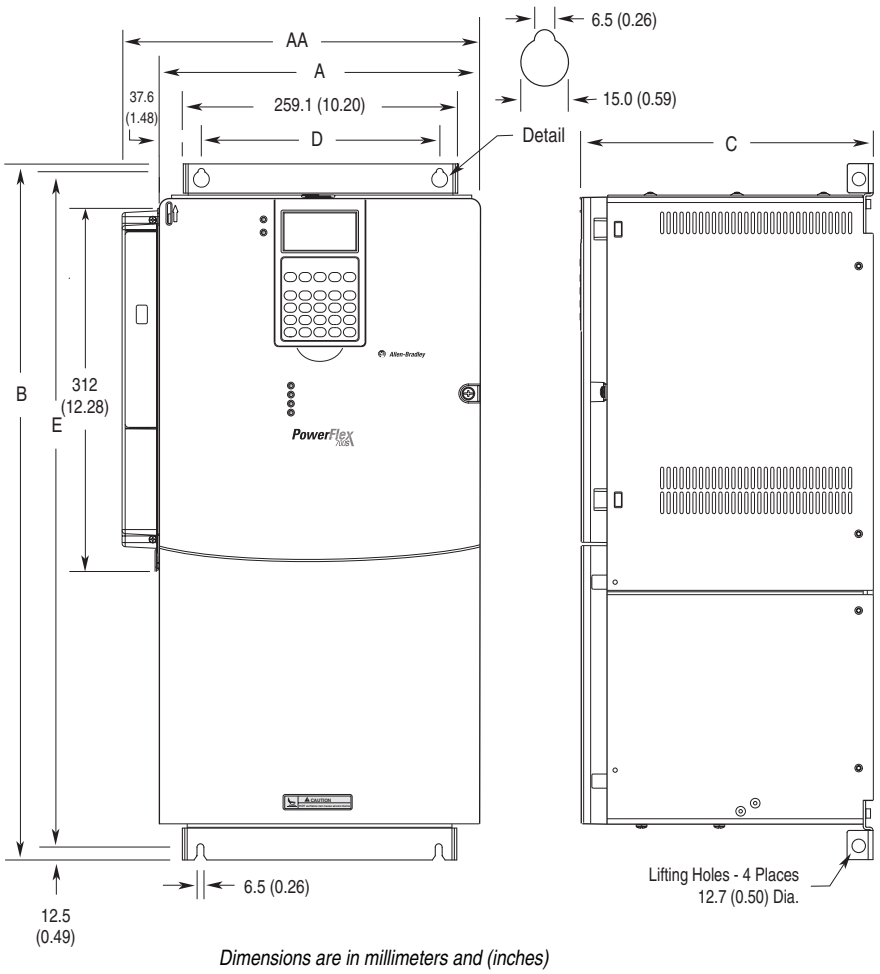
Dimensions are in millimeters and (inches)

Frame[1]	Slim A *(Max.)*	Expanded AA	B	C *(Max.)*	D	E	Weight[2] *kg (lbs.)*	
							Drive	Drive & Packaging
4	220.0 (8.66)	251.9 (9.92)	758.8 (29.87)	201.7 (7.94)	192.0 (7.56)	738.2 (29.06)	24.49 (54.0)	29.03 (64.0)

(1) Refer to the Table A.A table for frame information.

(2) Weights include HIM, DriveLogix controller with ControlNet daughtercard, Hi-Resolution Encoder Option, and 20-COMM-C ControlNet adapter.

Figure 4 PowerFlex 700S Frame 5 Dimensions



Dimensions are in millimeters and (inches)

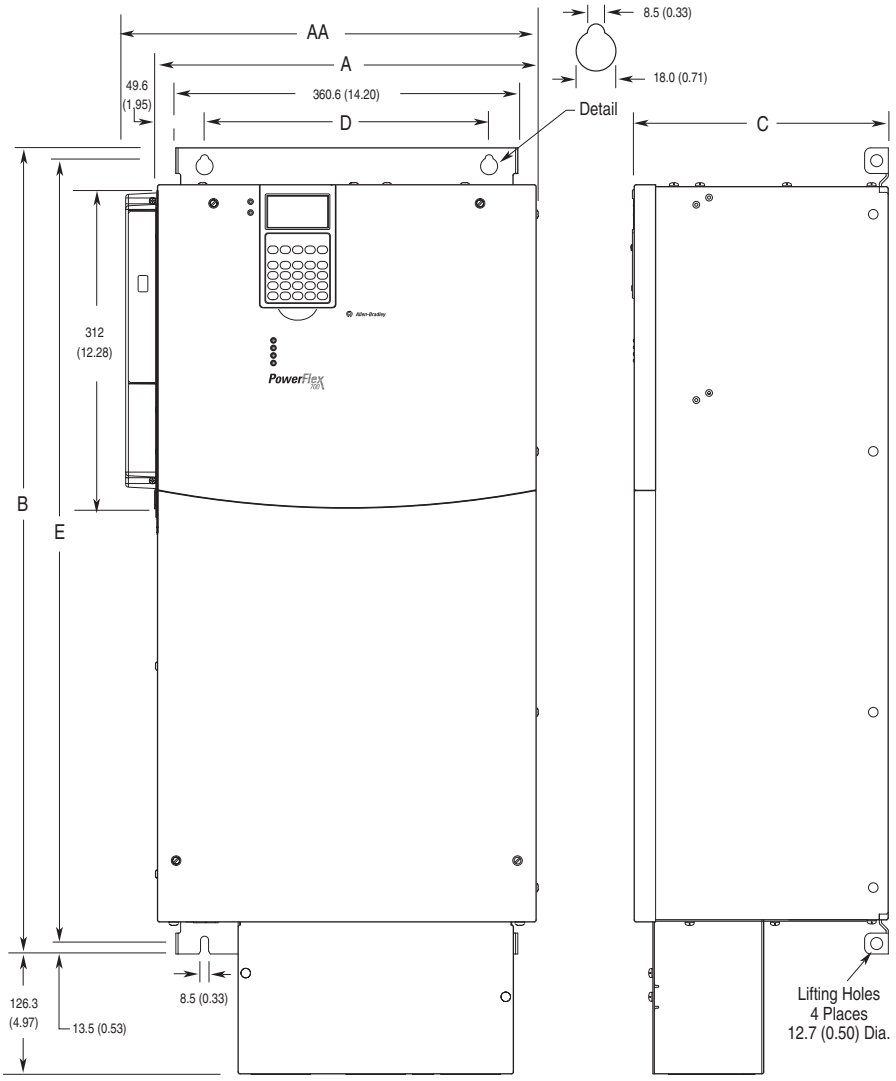
Frame[1]	Slim A *(Max.)*	Expanded AA	B	C *(Max.)*	D	E	Weight[3] *kg (lbs.)*	
							Drive	Drive & Packaging
5	308.0 (12.16)	339.9 (13.38)	644.5 (25.37)[2]	275.4 (10.84)	225.0 (8.86)	625.0 (24.61)	37.19 (82.0)	42.18 (93.0)

(1) Refer to the Table A.A table for frame information.

(2) When using the supplied junction box (100 HP drives Only), add an additional 45.1 mm (1.78 in.) to this dimension.

(3) Weights include HIM, DriveLogix controller with ControlNet daughtercard, Hi-Resolution Encoder Option, and 20-COMM-C ControlNet adapter.

Figure 5 PowerFlex 700S Frame 6 Dimensions



Dimensions are in millimeters and (inches)

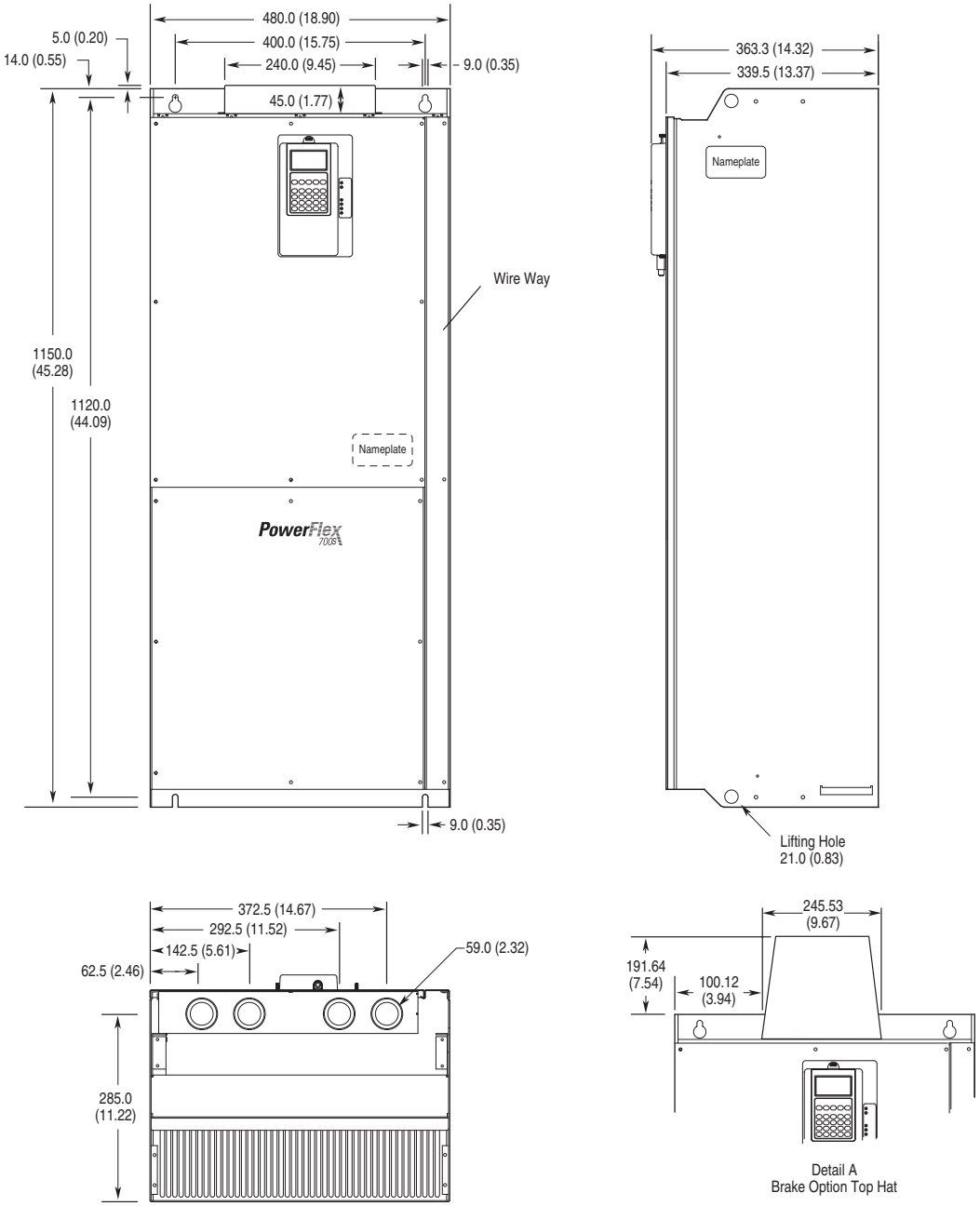
Frame[1]	Slim A *(Max.)*	Expanded AA	B	C *(Max.)*	D	E	Approx. Weight[2] *kg (lbs.)*	
							Drive	Drive & Packaging
6	403.9 (15.90)	435.8 (17.16)	850.0 (33.46)	275.5 (10.85)	300.0 (11.81)	825.0 (32.48)	71.44 (157.5)[3]	91.85 (202.5)

(1) Refer to the Table A.A table for frame information.

(2) Weights include HIM and Standard I/O.

(3) Add an additional 3.6 kg (8.00 lbs.) for 200 HP drives.

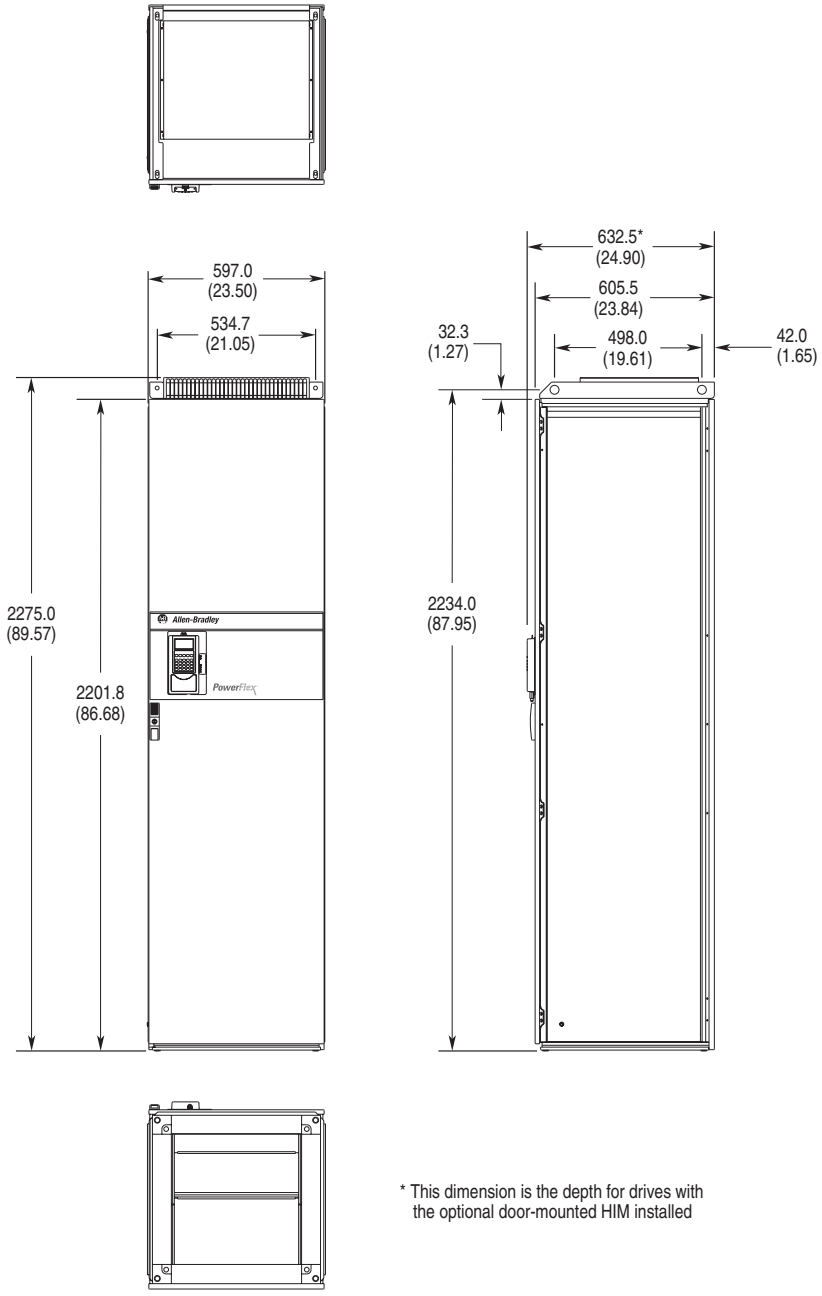
Figure 6 PowerFlex 700S Frame 9 Dimensions



Dimensions are in millimeters and (inches)

Frame	A	B	C	D	E	Weight *kg (lbs.)*	
						Drive	Drive & Packaging
9	480 (18.9)	1150 (45.28)	339 (13.37)	400 (15.75)	1120 (44.09)	142.9 (315)	176.9 (390)

Figure 7 PowerFlex 700S Frame 10 Dimensions

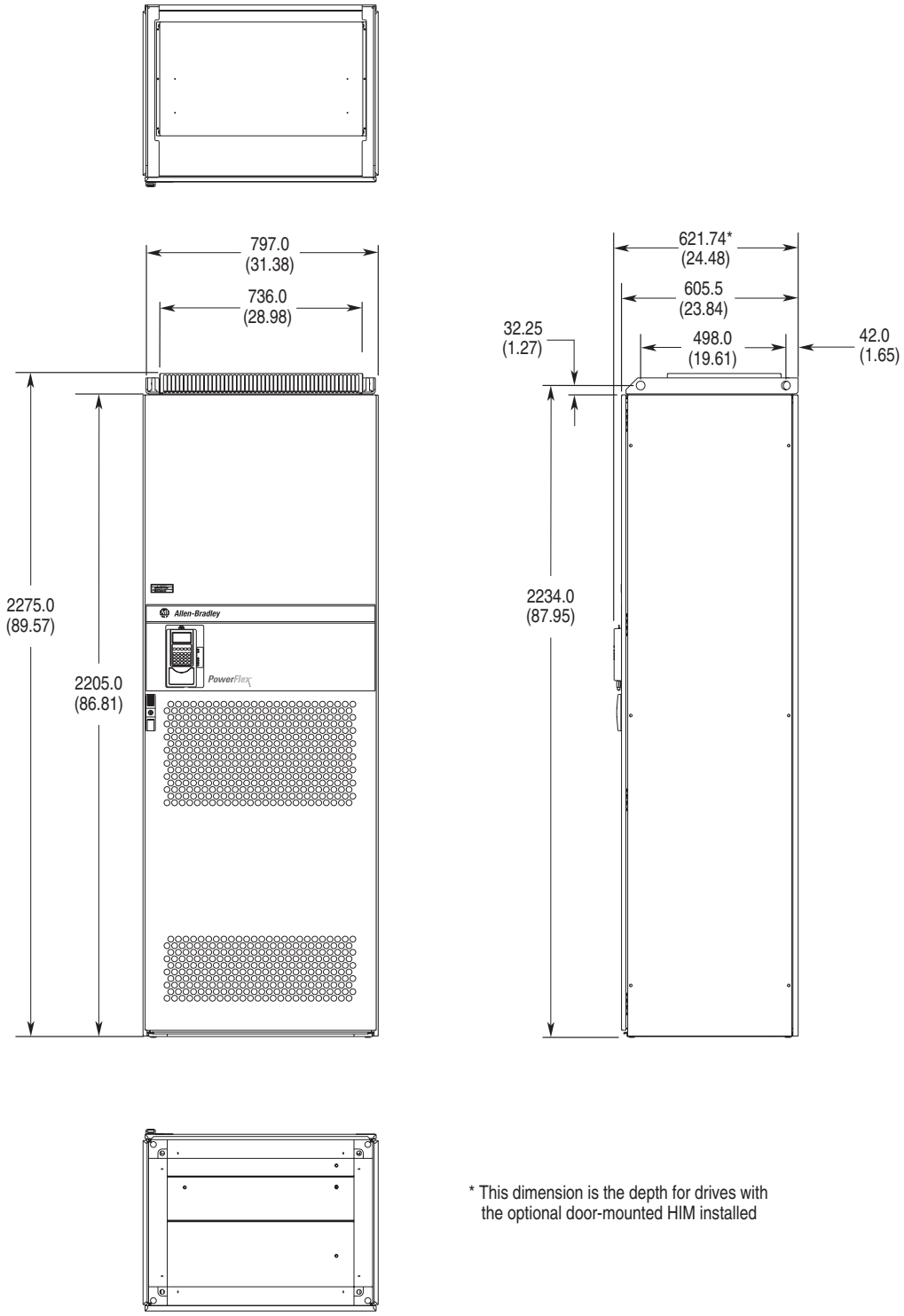


* This dimension is the depth for drives with the optional door-mounted HIM installed

Dimensions are in millimeters and (inches)

Frame	A	B	C	D	E	Weight *kg (lbs.)*	
						Drive	Drive & Packaging
10	597 (23.5)	2275 (89.57)	632.45 (24.9)	534 (21.05)	2201.75 (86.68)	432 (950)	447 (985)

Figure A.1 PowerFlex 700S Frame 11

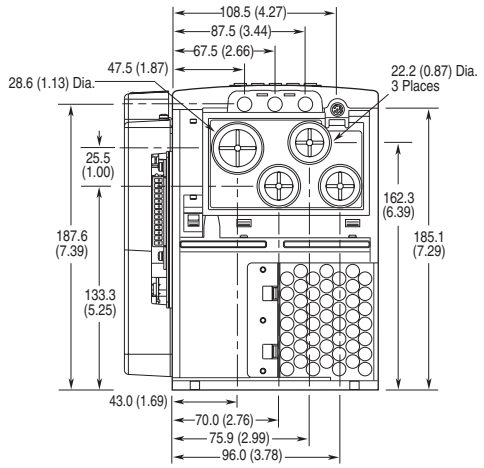


* This dimension is the depth for drives with the optional door-mounted HIM installed

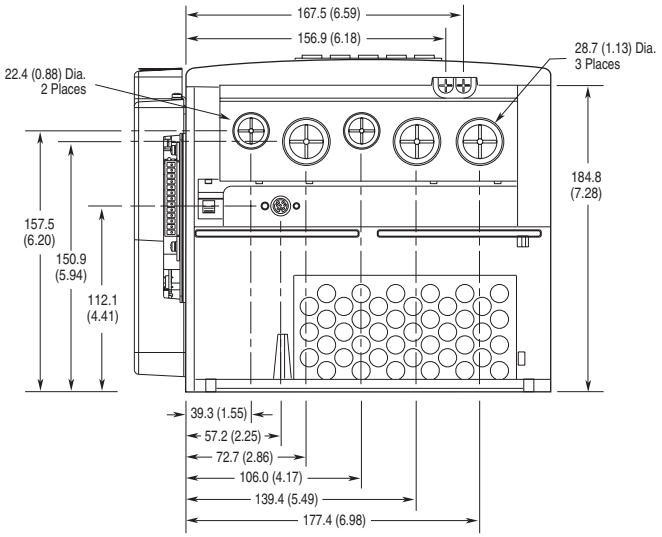
Dimensions are in millimeters and (inches)

Figure 8 PowerFlex 700S Bottom View Dimensions

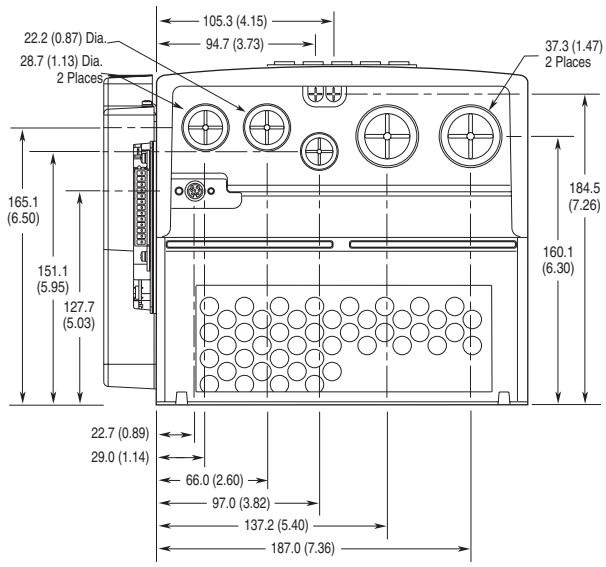
Frame 1



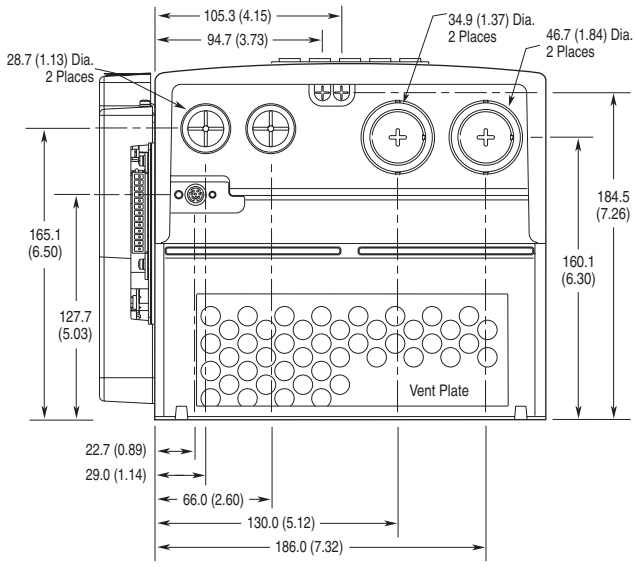
Frame 2



Frame 3 - All Drives, except 50 HP, 480 V (37 kW, 400V)



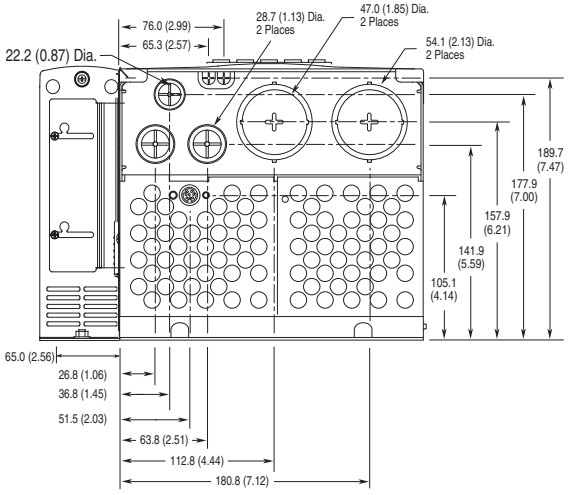
Frame 3 - 50 HP, 480V (37 kW, 400V) Normal Duty Drive



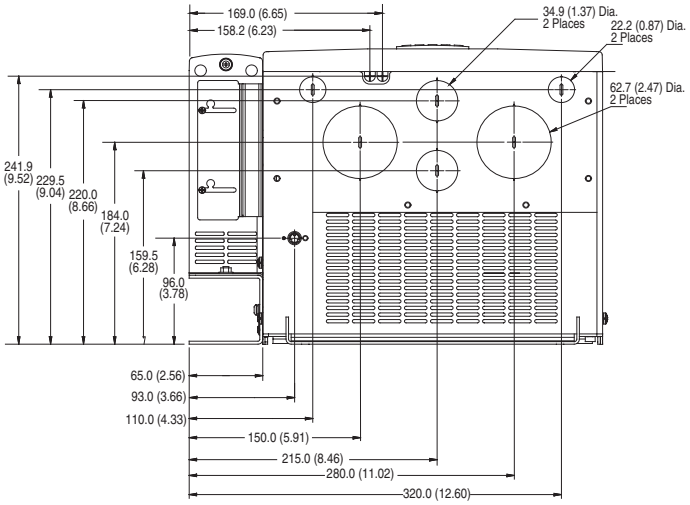
Dimensions are in millimeters and (inches)

Figure A.1 PowerFlex 700S Bottom View Dimensions

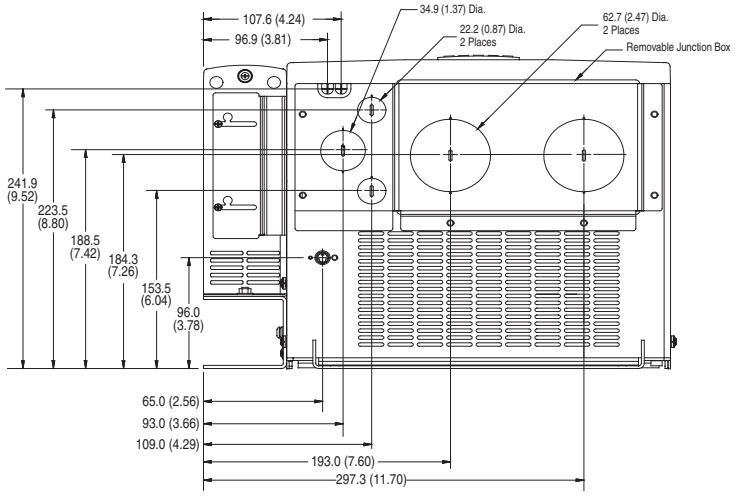
Frame 4



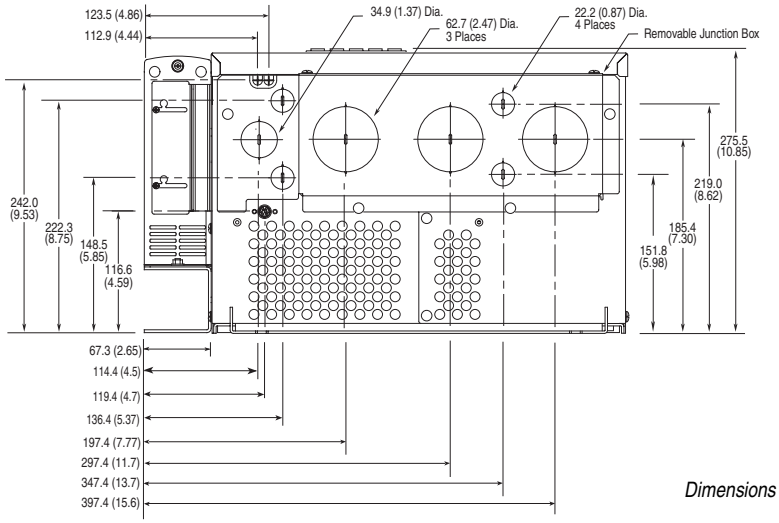
Frame 5 - 75 HP, 480V (55 kW, 400V) Normal Duty Drive



Frame 5 - 100 HP, 480V (55 kW, 400V) Normal Duty Drive



Frame 6



Dimensions are in millimeters and (inches)

Control Block Diagrams

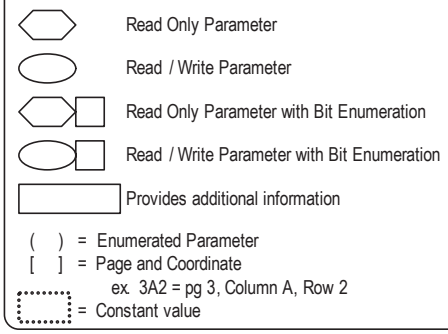
List of Control Block Diagrams

Flow diagrams on the following pages illustrate the drives' control algorithms.

Diagram Conventions and Definitions

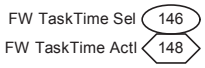
Definitions of the Per Unit system:
1.0 PU Position = Distance traveled / 1sec at Base Spd
1.0 PU Speed = Base Speed of the Motor
1.0 PU Torque = Base Torque of the Motor

Symbols:



Processor Task time selection.

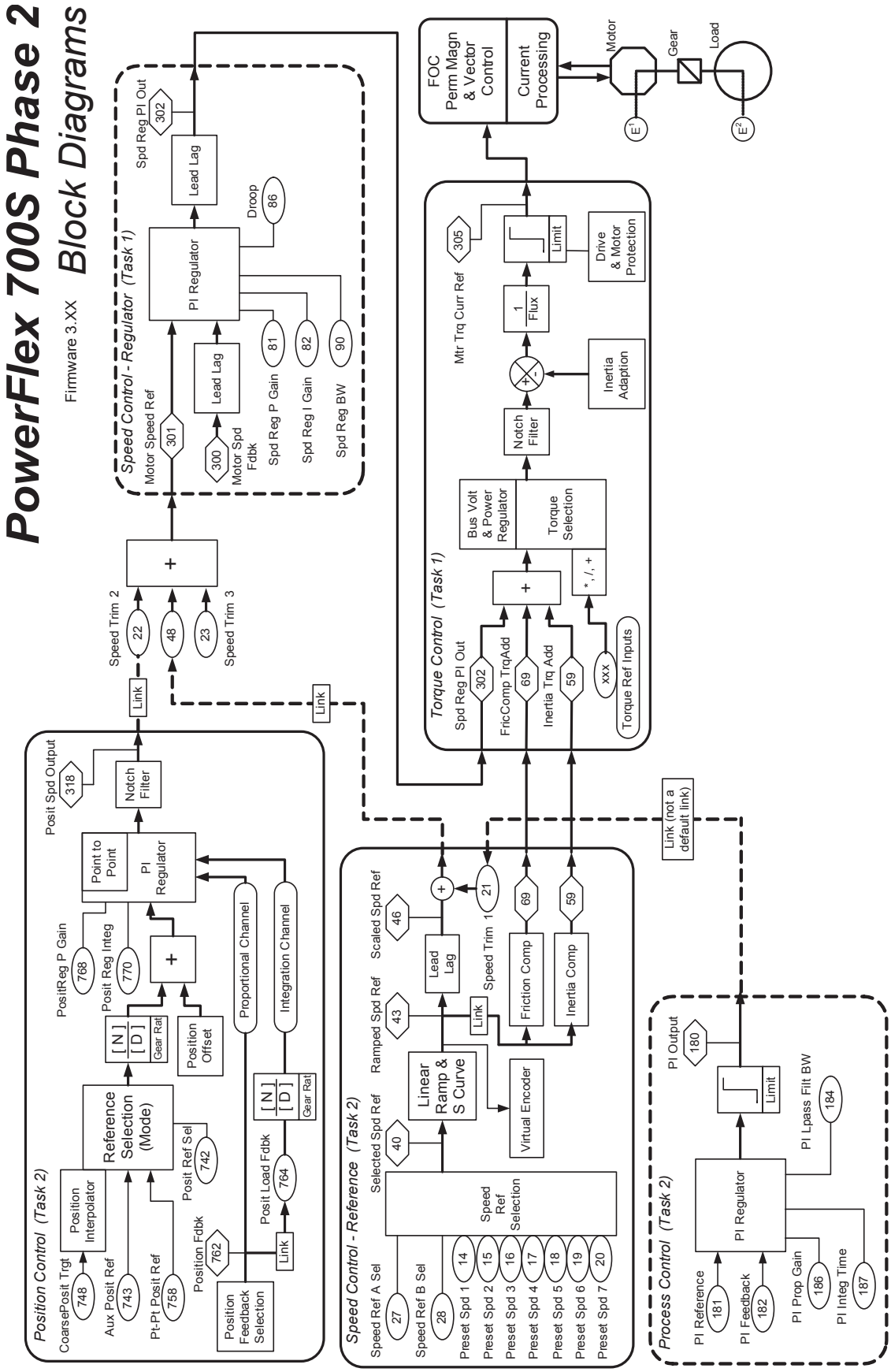
NOTE: Faster Task time selections may require program functions to be disabled to stay within processor load capabilities.

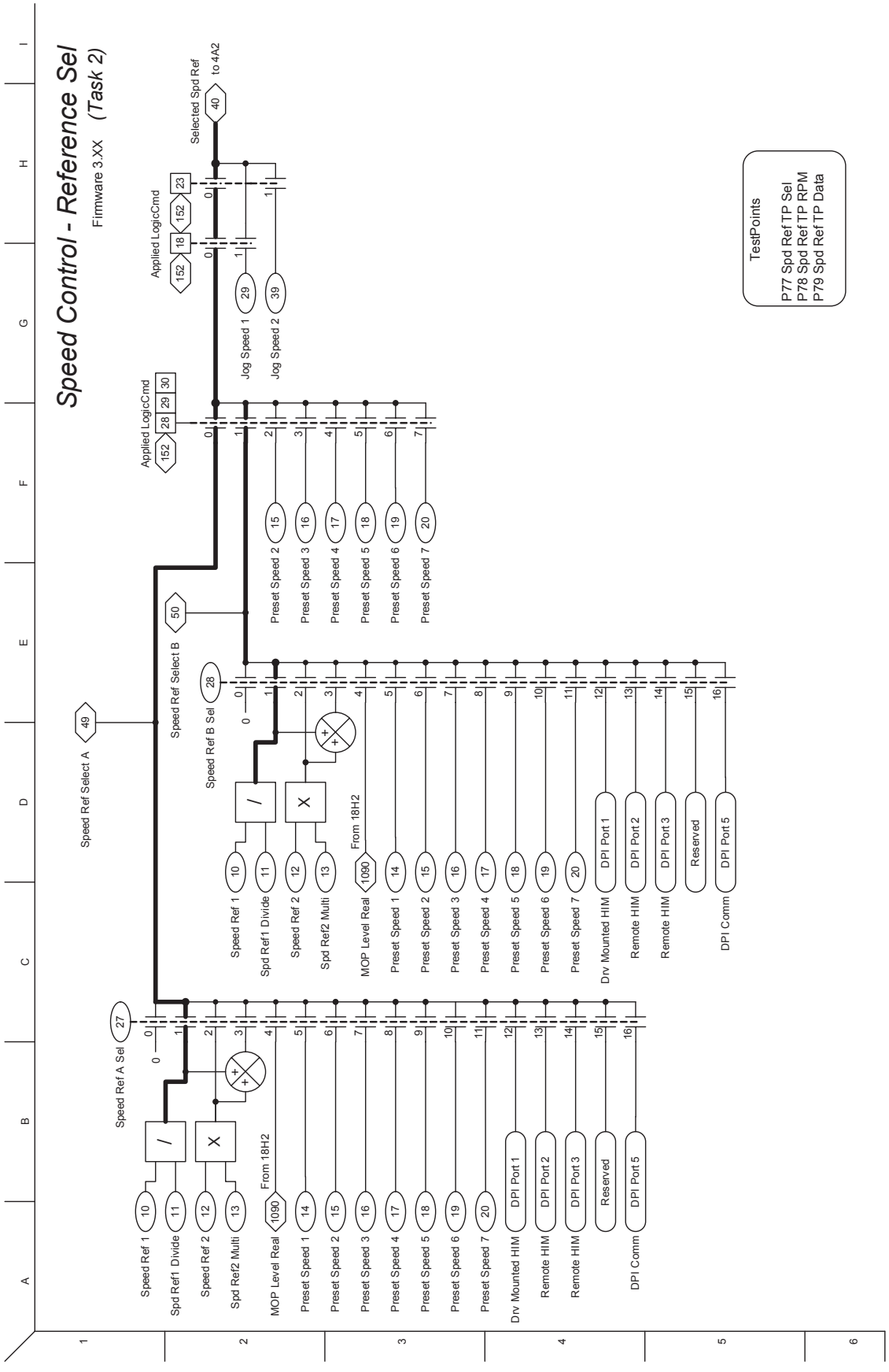


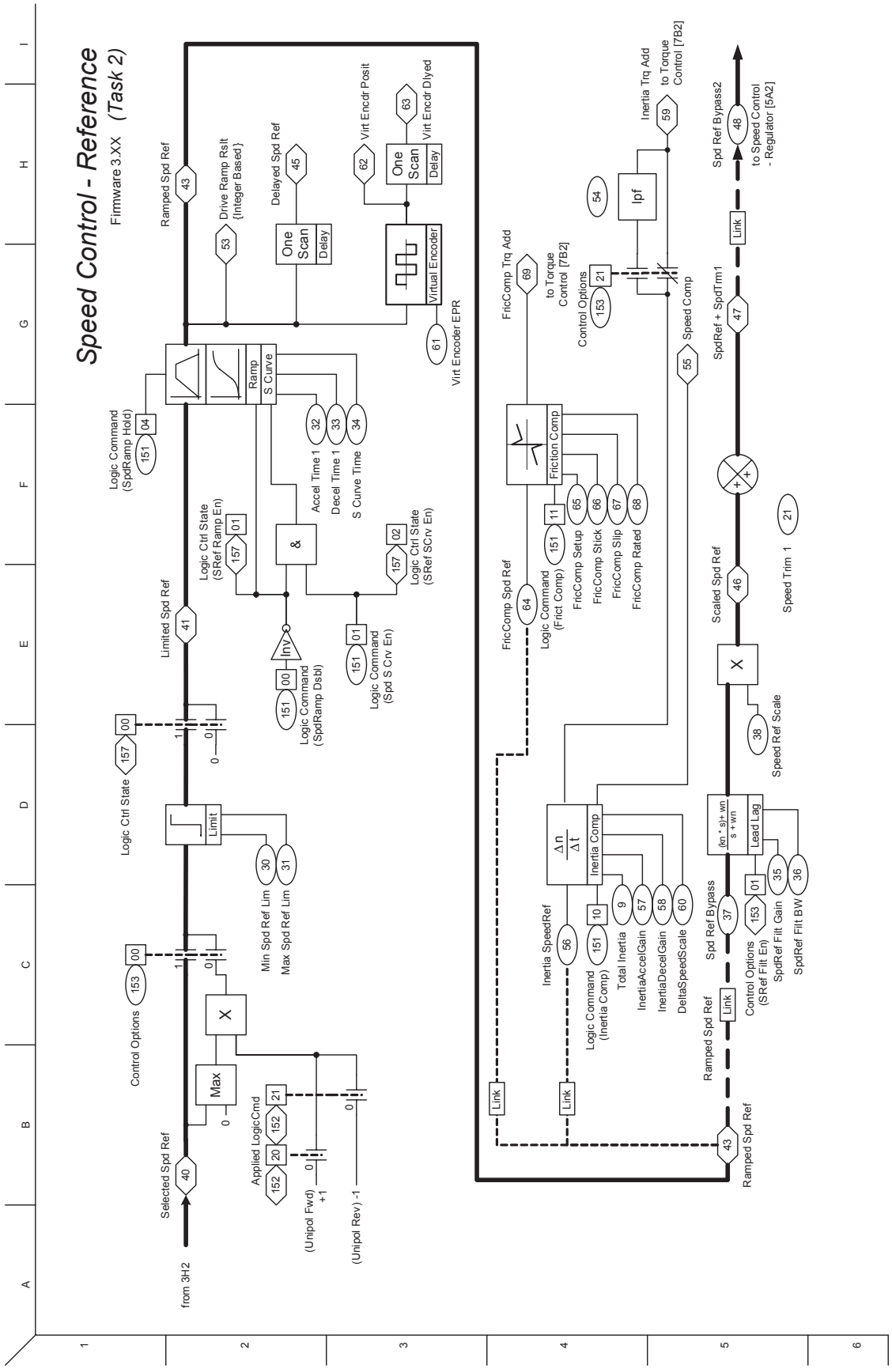
	val = 0	val = 1	val = 2
Task 1	0.5 mS	0.5 mS	0.25 mS
Task 2	2.0 mS	1.0 mS	1.0 mS
Task 3	8.0 mS	8.0 mS	8.0 mS

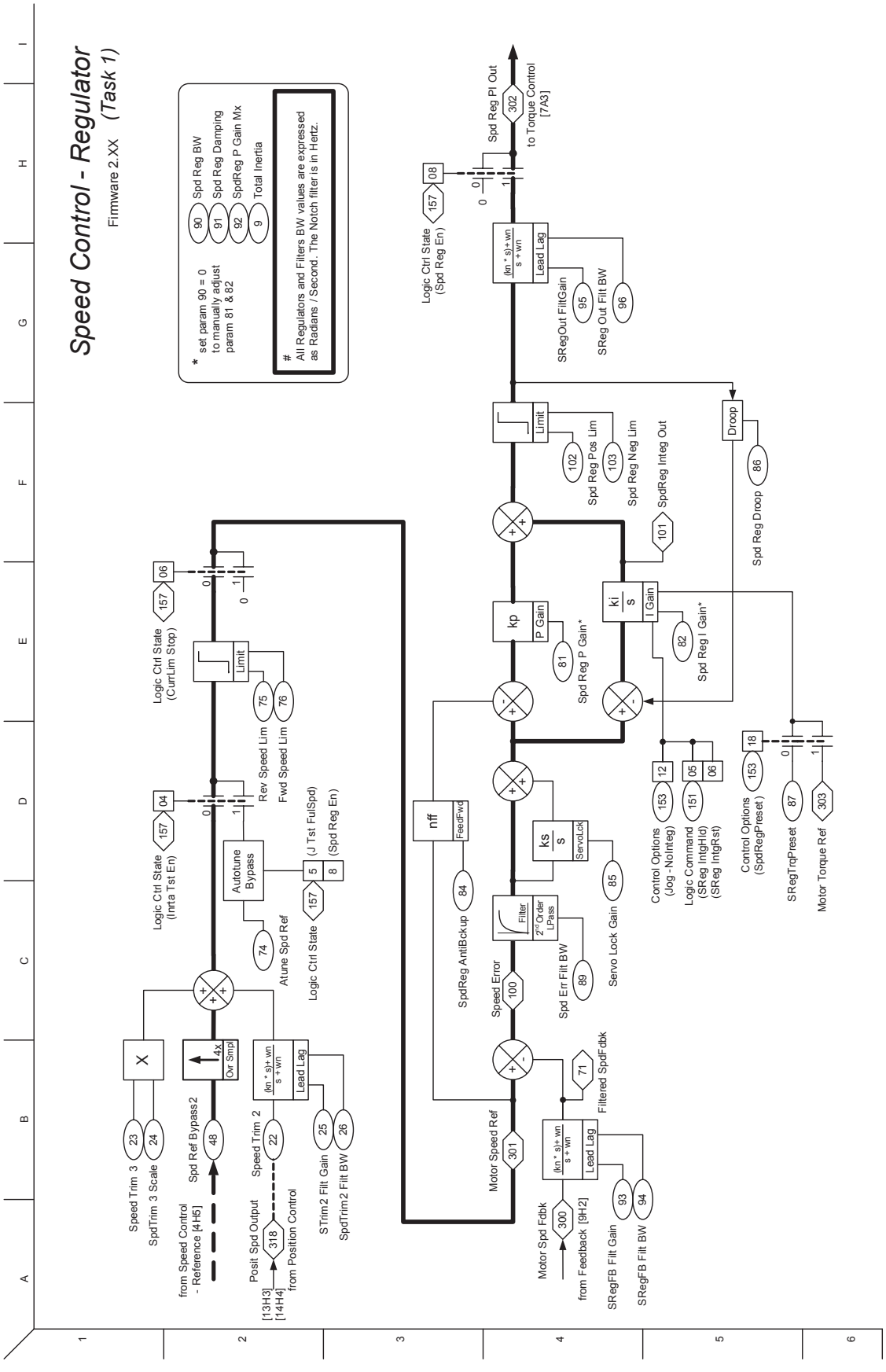
*** Notes, *Important*:**

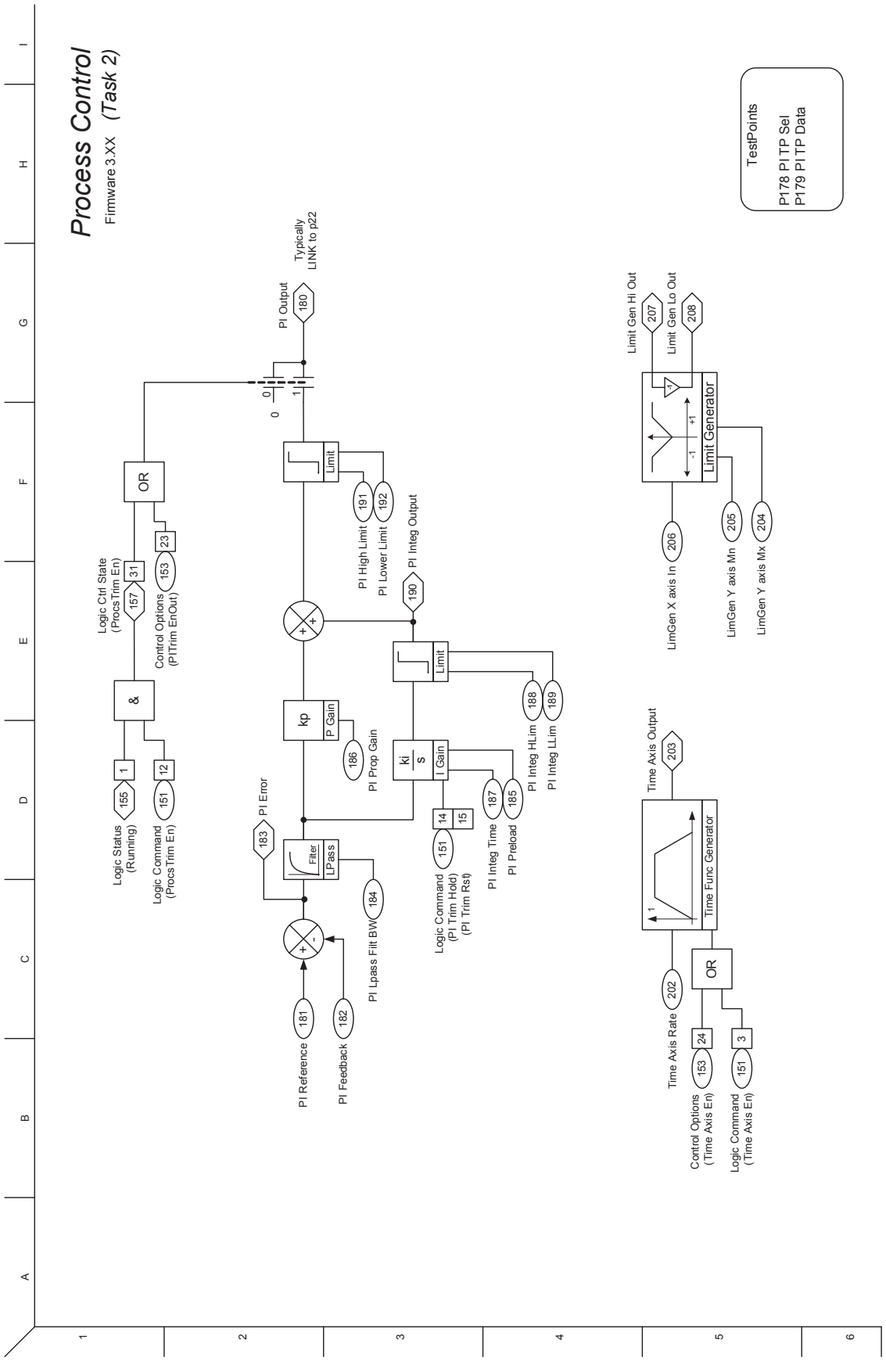
(1) Parameter 147 [FW Functions En] is used to activate and deactivate firmware functions. The PowerFlex 700S drive ships with the position regulator deactivated. **To enable the position regulator set p147b16 on.**
(2) Parameter 1000 [UserFunct Enable] is used to activate and deactivate the User Functions.
(3) These diagrams are for reference only and may not accurately reflect all logical control signals; actual functionality is implied by the approximated diagrams. Accuracy of these diagrams is not guaranteed.

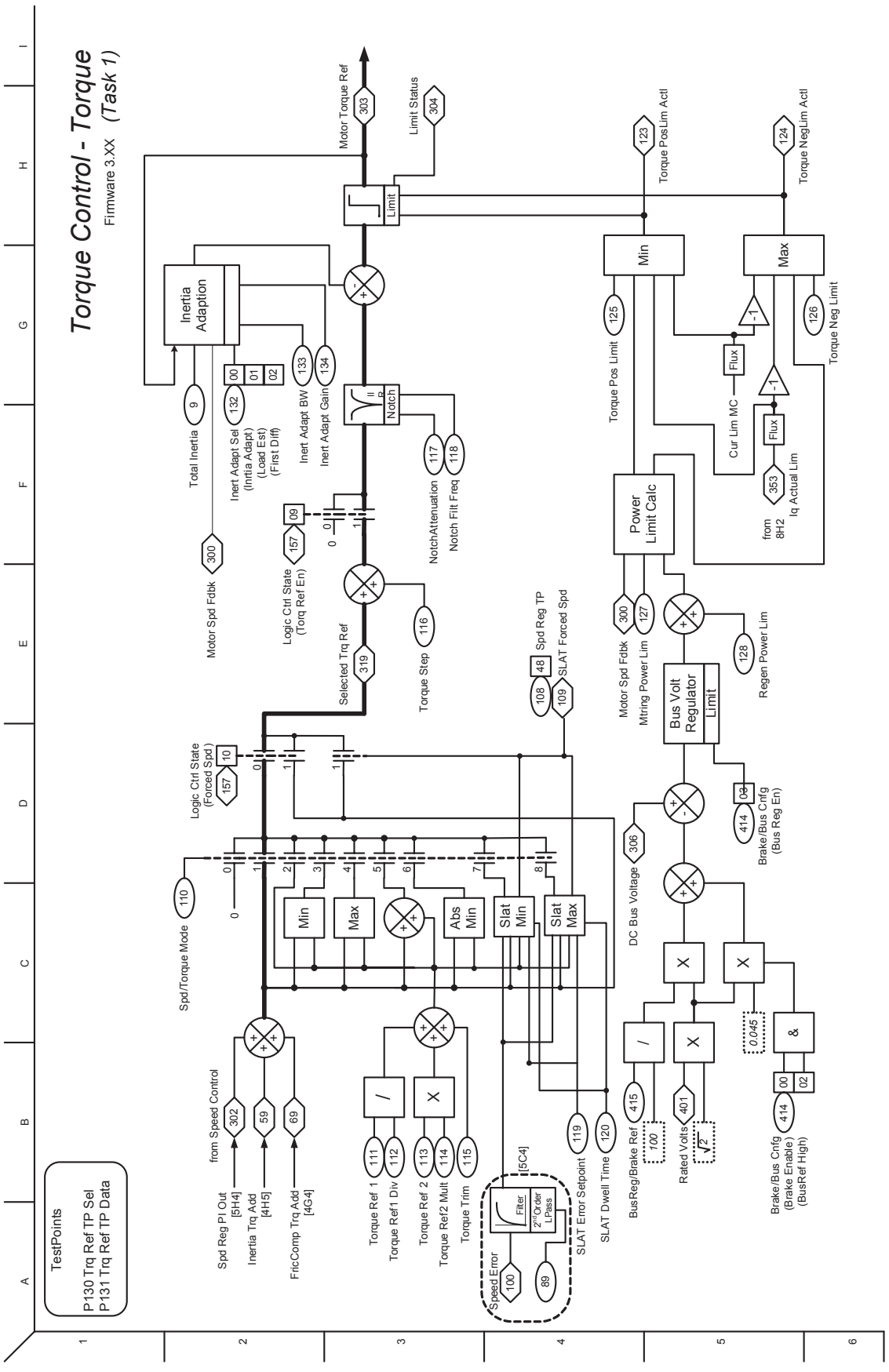

PowerFlex 700S Phase 2
Block Diagrams
Firmware 3.XX
Position Control (Task 2)
CoarsePosit Trgt
748
Position Interpolator
Aux Posit Ref
743
Pt-Pt Posit Ref
758
Reference Selection (Mode)
Posit Ref Sel
742
Position Fdbk
762
Position Feedback Selection
Posit Load Fdbk
764
Link
[N] [D] Gear Rat
Position Offset
Proportional Channel
Integration Channel
PositReg P Gain
768
Posit Reg Integ
770
Point to Point
PI Regulator
Posit Spd Output
318
Notch Filter
Link
Speed Trim 2
22
48
23
Speed Trim 3
Speed Control - Regulator (Task 1)
Motor Speed Ref
301
Motor Spd Fdbk
300
Lead Lag
PI Regulator
Droop
86
Spd Reg P Gain
81
Spd Reg I Gain
82
Spd Reg BW
90
Lead Lag
Spd Reg PI Out
302
Link
Speed Control - Reference (Task 2)
Speed Ref A Sel
27
Speed Ref B Sel
28
Preset Spd 1
14
Preset Spd 2
15
Preset Spd 3
16
Preset Spd 4
17
Preset Spd 5
18
Preset Spd 6
19
Preset Spd 7
20
Speed Ref Selection
Selected Spd Ref
40
Linear Ramp & S Curve
Ramped Spd Ref
43
Virtual Encoder
Link
Lead Lag
Scaled Spd Ref
46
Speed Trim 1
21
Friction Comp
69
Inertia Comp
59
Link (not a default link)
Torque Control (Task 1)
Spd Reg PI Out
302
FricComp TrqAdd
69
Inertia Trq Add
59
xxx
Torque Ref Inputs
Bus Volt & Power Regulator
Torque Selection
*, /, +
Notch Filter
Inertia Adaption
1/Flux
Limit
Drive & Motor Protection
Mtr Trq Curr Ref
305
FOC Perm Magn & Vector Control
Current Processing
Motor
Gear
Load
E1
E2
Process Control (Task 2)
PI Reference
181
PI Feedback
182
PI Prop Gain
186
PI Integ Time
187
PI Regulator
PI Output
180
Limit
PI Lpass Filt BW
184

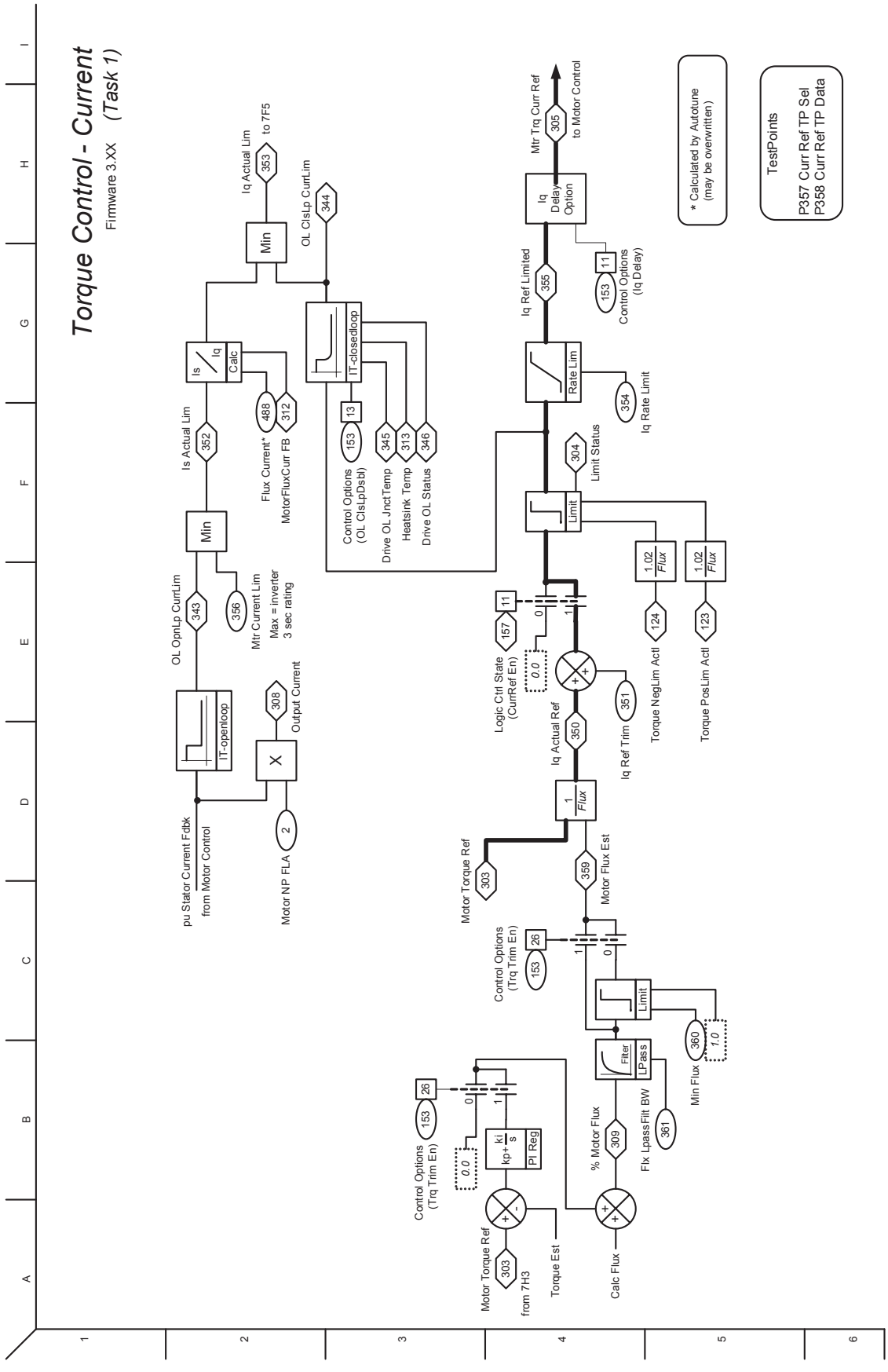

Speed Control - Reference Sel
Firmware 3.XX (Task 2)
Speed Ref A Sel
Speed Ref Select A
Speed Ref B Sel
Speed Ref Select B
Applied LogicCmd
Selected Spd Ref
to 4A2
Jog Speed 1
Jog Speed 2
Speed Ref 1
Spd Ref1 Divide
Speed Ref 2
Spd Ref2 Multi
From 18H2
MOP Level Real
Preset Speed 1
Preset Speed 2
Preset Speed 3
Preset Speed 4
Preset Speed 5
Preset Speed 6
Preset Speed 7
Drv Mounted HIM
Remote HIM
Remote HIM
Reserved
DPI Comm
DPI Port 1
DPI Port 2
DPI Port 3
DPI Port 5
TestPoints
P77 Spd Ref TP Sel
P78 Spd Ref TP RPM
P79 Spd Ref TP Data

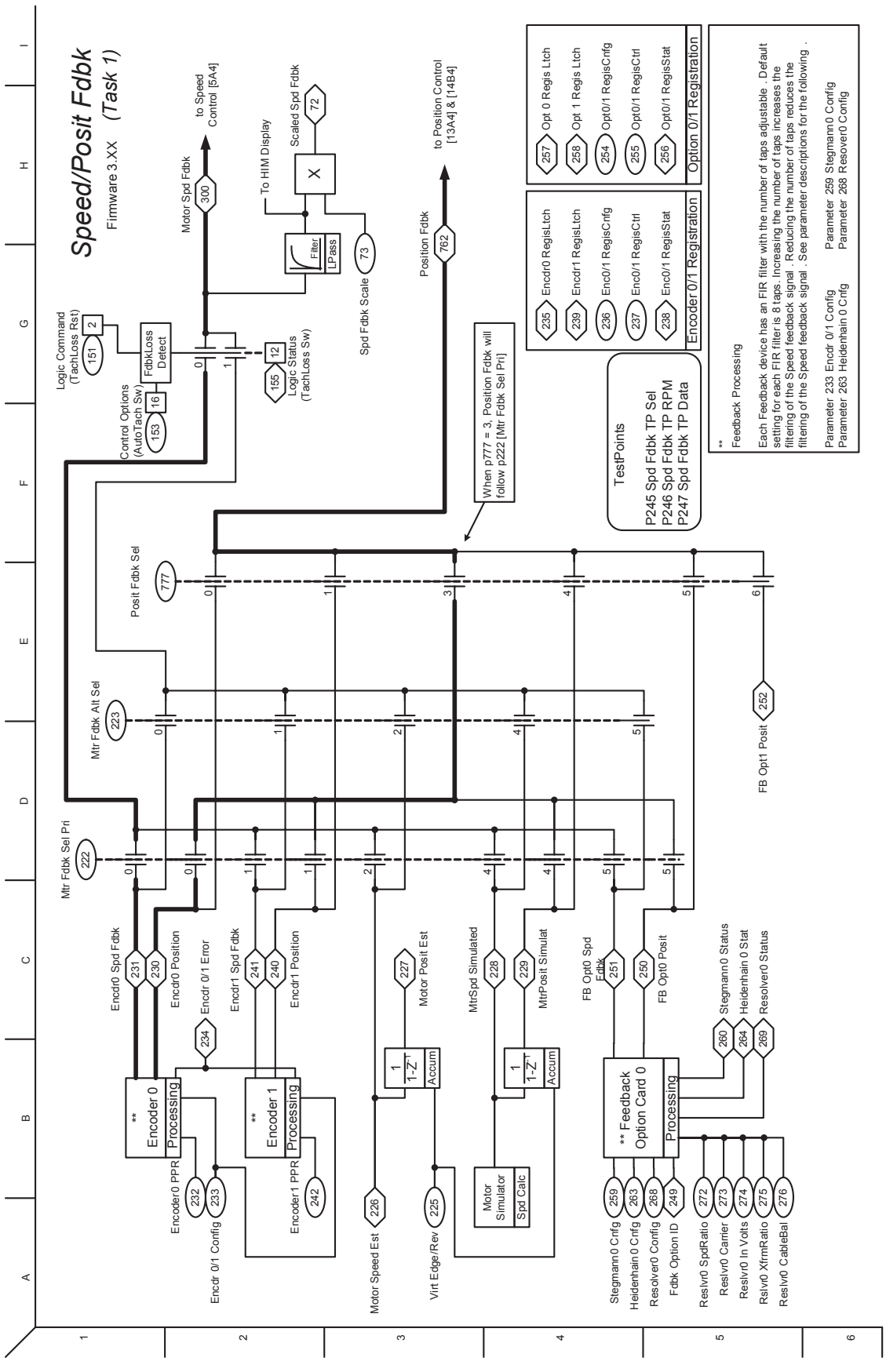

Speed Control - Reference
Firmware 3.XX (Task 2)
Ramped Spd Ref
Drive Ramp Rslt {Integer Based}
Delayed Spd Ref
Virt Encdr Posit
Virt Encdr Dlyed
Virtual Encoder
Virt Encoder EPR
Ramp
S Curve
Accel Time 1
Decel Time 1
S Curve Time
Logic Command (SpdRamp Hold)
Logic Ctrl State (SRef Ramp En)
Logic Ctrl State (SRef SCrv En)
Logic Command (SpdRamp Dsbl)
Logic Command (Spd S Crv En)
Limited Spd Ref
Logic Ctrl State
Limit
Min Spd Ref Lim
Max Spd Ref Lim
Control Options
Selected Spd Ref
from 3H2
Applied LogicCmd
(Unipol Fwd) +1
(Unipol Rev) -1
FricComp Trq Add
to Torque Control [7B2]
FricComp Spd Ref
Logic Command (Frict Comp)
Friction Comp
FricComp Setup
FricComp Stick
FricComp Slip
FricComp Rated
Inertia SpeedRef
Logic Command (Inertia Comp)
Inertia Comp
Total Inertia
InertiaAccelGain
InertiaDecelGain
DeltaSpeedScale
Ramped Spd Ref
Spd Ref Bypass
Control Options (SRef Filt En)
SpdRef Filt Gain
SpdRef Filt BW
Lead Lag
Scaled Spd Ref
Speed Ref Scale
Speed Trim 1
SpdRef + SpdTrm1
Speed Comp
Inertia Trq Add
to Torque Control [7B2]
Spd Ref Bypass2
to Speed Control - Regulator [5A2]

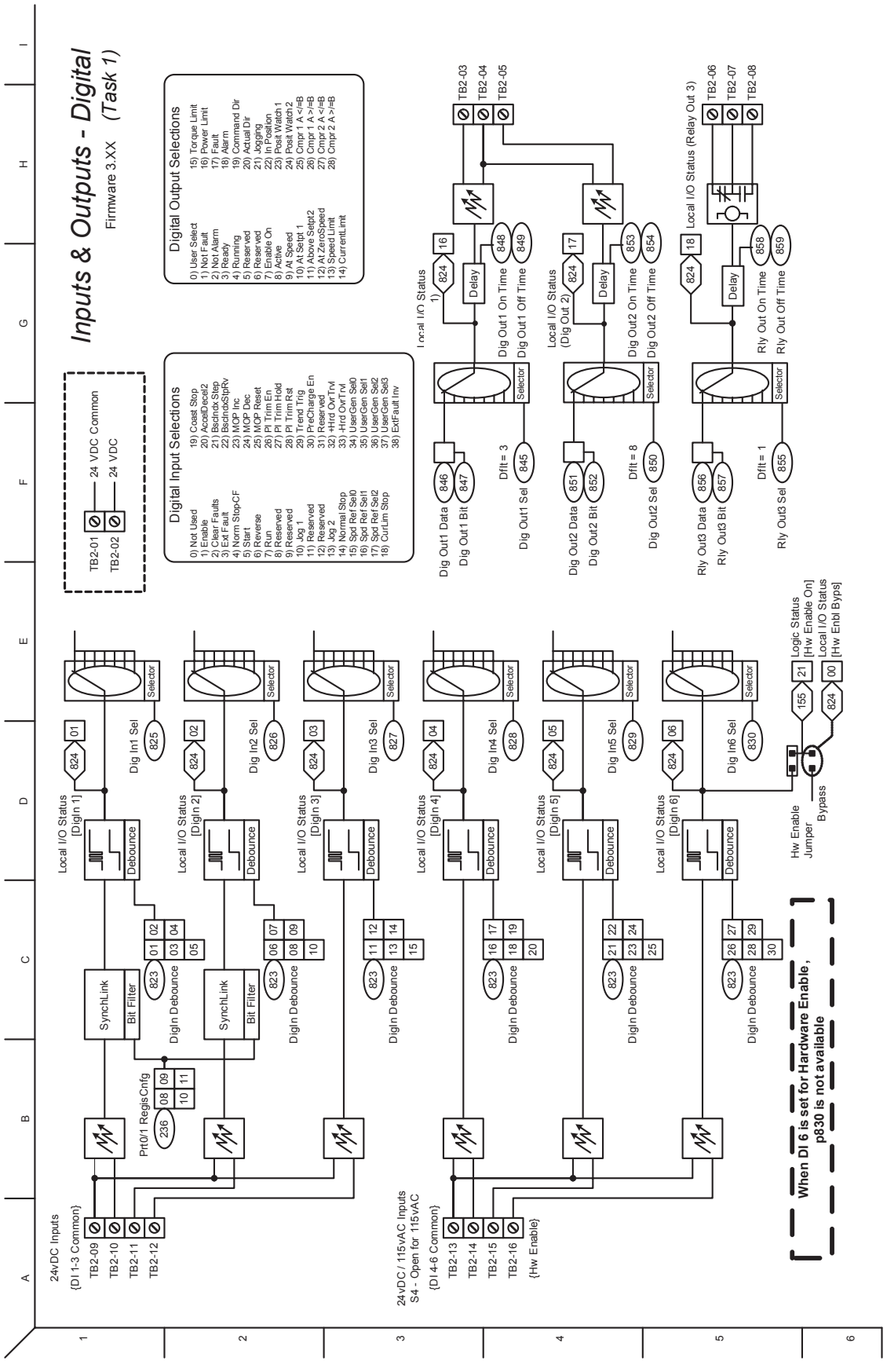

Speed Control - Regulator
Firmware 2.XX (Task 1)
* set param 90 = 0 to manually adjust param 81 & 82
90 Spd Reg BW
91 Spd Reg Damping
92 SpdReg P Gain Mx
9 Total Inertia
All Regulators and Filters BW values are expressed as Radians / Second. The Notch filter is in Hertz.
Speed Trim 3
SpdTrim 3 Scale
Spd Ref Bypass2
from Speed Control - Reference [4H5]
Posit Spd Output
[13H3] [14H4] from Position Control
Speed Trim 2
STrim2 Filt Gain
SpdTrim2 Filt BW
Logic Ctrl State (Inrta Tst En)
Logic Ctrl State (CurrLim Stop)
Rev Speed Lim
Fwd Speed Lim
Autotune Bypass
Atune Spd Ref
Logic Ctrl State
(J Tst FulSpd)
(Spd Reg En)
nff
FeedFwd
SpdReg AntiBckup
Speed Error
Spd Err Filt BW
Filter 2nd Order LPass
ks/s ServoLck
Servo Lock Gain
Filtered SpdFdbk
Motor Speed Ref
Motor Spd Fdbk
from Feedback [9H2]
SRegFB Filt Gain
SRegFB Filt BW
Logic Ctrl State (Spd Reg En)
Spd Reg PI Out
to Torque Control [7A3]
SRegOut FiltGain
SReg Out Filt BW
Limit
Spd Reg Pos Lim
Spd Reg Neg Lim
SpdReg Integ Out
kp P Gain
Spd Reg P Gain*
ki/s I Gain
Spd Reg I Gain*
Droop
Spd Reg Droop
Control Options (Jog - NoInteg)
Logic Command (SReg IntgHld) (SReg IntgRst)
Control Options (SpdRegPreset)
SRegTrqPreset
Motor Torque Ref

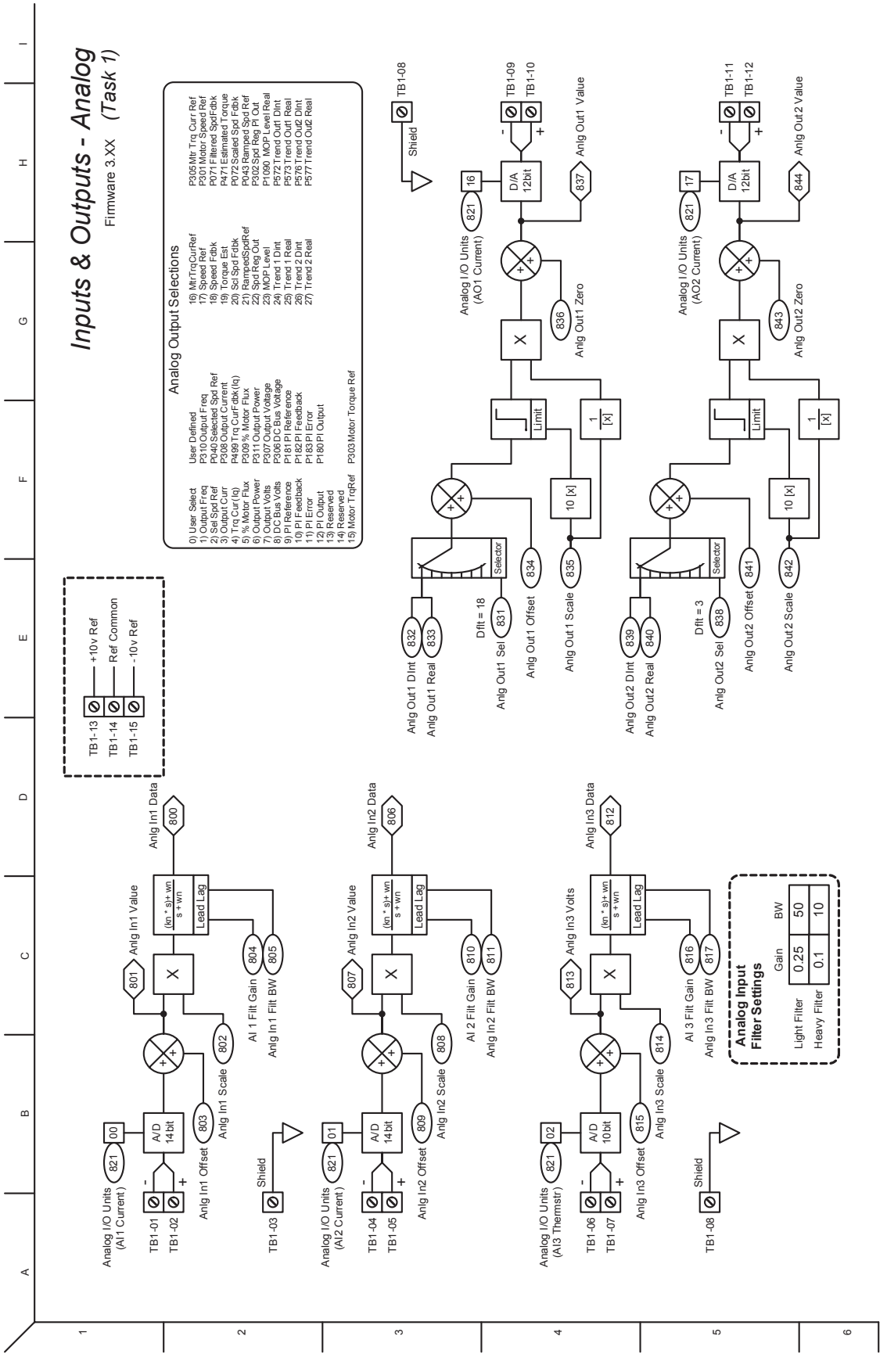

Process Control
Firmware 3.XX (Task 2)
TestPoints
P178 PI TP Sel
P179 PI TP Data
Logic Status (Running)
Logic Command (ProcsTrim En)
Logic Ctrl State (ProcsTrim En)
Control Options (PITrim EnOut)
&
OR
PI Error
PI Reference
PI Feedback
PI Lpass Filt BW
PI Prop Gain
PI Integ Time
PI Preload
PI Integ HLim
PI Integ LLim
Logic Command (PI Trim Hold)
(PI Trim Rst)
PI High Limit
PI Lower Limit
PI Integ Output
PI Output
Typically LINK to p22
Limit
Filter
LPass
kp
P Gain
ki
s
I Gain
Time Axis Output
Time Axis Rate
Control Options (Time Axis En)
Logic Command (Time Axis En)
Time Func Generator
Limit Gen Hi Out
Limit Gen Lo Out
LimGen X axis In
LimGen Y axis Mn
LimGen Y axis Mx
Limit Generator

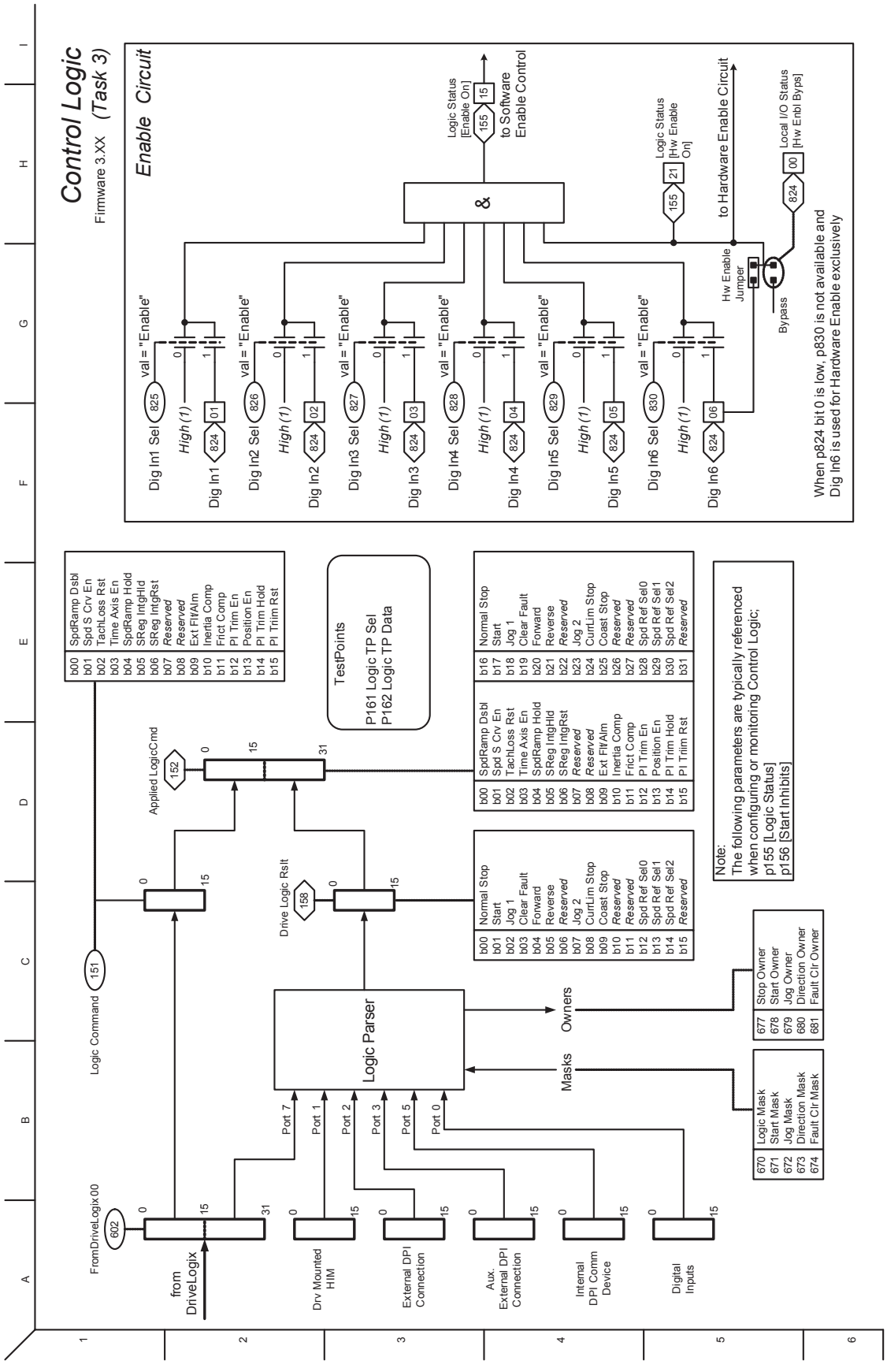

Torque Control - Torque
Firmware 3.XX (Task 1)
TestPoints
P130 Trq Ref TP Sel
P131 Trq Ref TP Data
Motor Torque Ref
Limit Status
Inertia Adaption
Total Inertia
Inert Adapt Sel (Inrtia Adapt) (Load Est) (First Diff)
Inert Adapt BW
Inert Adapt Gain
Notch
NotchAttenuation
Notch Filt Freq
Motor Spd Fdbk
Logic Ctrl State (Torq Ref En)
Selected Trq Ref
Torque Step
Logic Ctrl State (Forced Spd)
Spd/Torque Mode
Min
Max
Abs Min
Slat Min
Slat Max
Spd Reg TP
SLAT Forced Spd
from Speed Control
Spd Reg PI Out [5H4]
Inertia Trq Add [4H5]
FricComp Trq Add [4G4]
Torque Ref 1
Torque Ref1 Div
Torque Ref 2
Torque Ref2 Mult
Torque Trim
Speed Error
Filter
2nd Order LPass
[5C4]
SLAT Error Setpoint
SLAT Dwell Time
Torque Pos Limit
Torque PosLim Actl
Torque NegLim Actl
Torque Neg Limit
Power Limit Calc
Cur Lim MC
Flux
from 8H2
Iq Actual Lim
DC Bus Voltage
Motor Spd Fdbk
Mtring Power Lim
Bus Volt Regulator
Limit
Regen Power Lim
Brake/Bus Cnfg (Bus Reg En)
BusReg/Brake Ref
Rated Volts
0.045
Brake/Bus Cnfg (Brake Enable) (BusRef High)

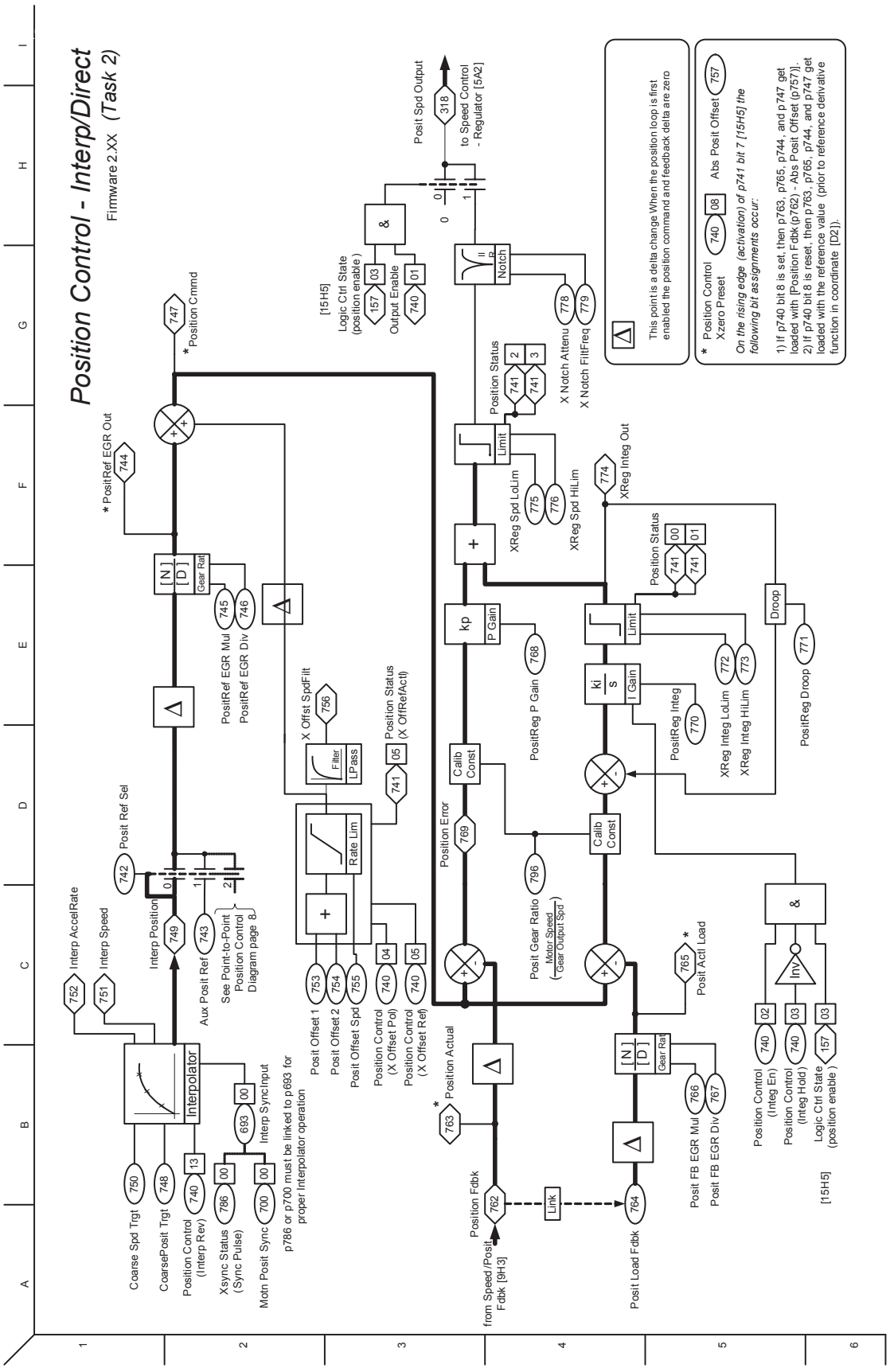

Torque Control - Current
Firmware 3.XX (Task 1)
TestPoints
P357 Curr Ref TP Sel
P358 Curr Ref TP Data
* Calculated by Autotune (may be overwritten)
Iq Actual Lim
353
to 7F5
Min
OL CtsLp CurrLim
344
Mtr Trq Curr Ref
305
to Motor Control
Iq Delay Option
Is
Iq
Calc
IT-closedloop
Iq Ref Limited
355
Control Options (Iq Delay)
153
11
Rate Lim
Is Actual Lim
352
488
312
Flux Current*
MotorFluxCurr FB
13
153
Control Options (OL CtsLpDsbl)
345
Drive OL JnctTemp
313
Heatsink Temp
346
Drive OL Status
354
Iq Rate Limit
304
Limit Status
Limit
OL OpnLp CurrLim
343
356
Mtr Current Lim
Max = inverter 3 sec rating
IT-openloop
308
Output Current
1.02 Flux
124
Torque NegLim Actl
1.02 Flux
123
Torque PosLim Actl
pu Stator Current Fdbk
from Motor Control
2
Motor NP FLA
Logic Ctrl State (CurrRef En)
157
11
0
0.0
1
Iq Actual Ref
350
Iq Ref Trim
351
1 Flux
Motor Torque Ref
303
359
Motor Flux Est
Control Options (Trq Trim En)
153
26
1
0
Limit
Filter
LPass
Fix LpassFilt BW
361
360
1.0
Min Flux
% Motor Flux
309
Control Options (Trq Trim En)
153
26
0
1
0.0
ki
s
kp+
PI Reg
Motor Torque Ref
303
from 7H3
Torque Est
Calc Flux

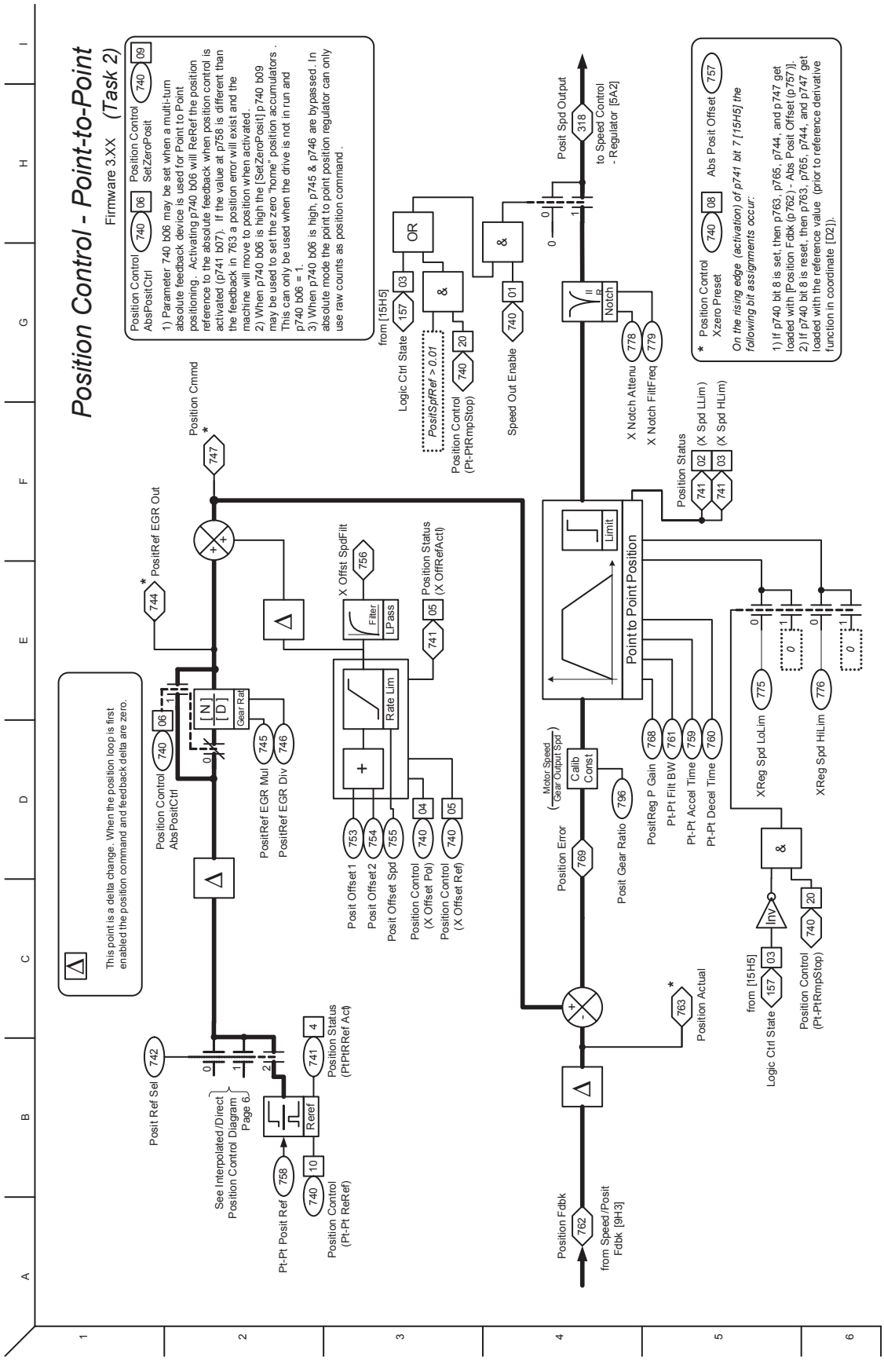

Speed/Posit Fdbk
Firmware 3.XX (Task 1)
Logic Command (TachLoss Rst)
Control Options (AutoTach Sw)
FdbkLoss Detect
Logic Status (TachLoss Sw)
Motor Spd Fdbk
to Speed Control [5A4]
To HIM Display
Scaled Spd Fdbk
Filter
LPass
Spd Fdbk Scale
Position Fdbk
to Position Control [13A4] & [14B4]
When p777 = 3, Position Fdbk will follow p222 [Mtr Fdbk Sel Pri]
Posit Fdbk Sel
Mtr Fdbk Alt Sel
Mtr Fdbk Sel Pri
FB Opt1 Posit
Encdr0 Spd Fdbk
Encdr0 Position
Encdr 0/1 Error
Encdr1 Spd Fdbk
Encdr1 Position
Motor Posit Est
MtrSpd Simulated
MtrPosit Simulat
FB Opt0 Spd Fdbk
FB Opt0 Posit
Stegmann0 Status
Heidenhain 0 Stat
Resolver0 Status
** Encoder 0 Processing
** Encoder 1 Processing
** Feedback Option Card 0 Processing
Motor Simulator
Spd Calc
Accum
Encoder0 PPR
Encoder1 PPR
Encdr 0/1 Config
Motor Speed Est
Virt Edge/Rev
Stegmann0 Cnfg
Heidenhain 0 Cnfg
Resolver0 Config
Fdbk Option ID
Reslvr0 SpdRatio
Reslvr0 Carrier
Reslvr0 In Volts
Rslvr0 XfrmRatio
Reslvr0 CableBal
TestPoints
P245 Spd Fdbk TP Sel
P246 Spd Fdbk TP RPM
P247 Spd Fdbk TP Data
Encoder 0/1 Registration
Encdr0 RegisLtch
Encdr1 RegisLtch
Enc0/1 RegisCnfg
Enc0/1 RegisCtrl
Enc0/1 RegisStat
Option 0/1 Registration
Opt 0 Regis Ltch
Opt 1 Regis Ltch
Opt0/1 RegisCnfg
Opt0/1 RegisCtrl
Opt0/1 RegisStat
** Feedback Processing
Each Feedback device has an FIR filter with the number of taps adjustable . Default setting for each FIR filter is 8 taps. Increasing the number of taps increases the filtering of the Speed feedback signal . Reducing the number of taps reduces the filtering of the Speed feedback signal . See parameter descriptions for the following .
Parameter 233 Encdr 0/1 Config
Parameter 263 Heidenhain 0 Cnfg
Parameter 259 Stegmann0 Config
Parameter 268 Resover0 Config

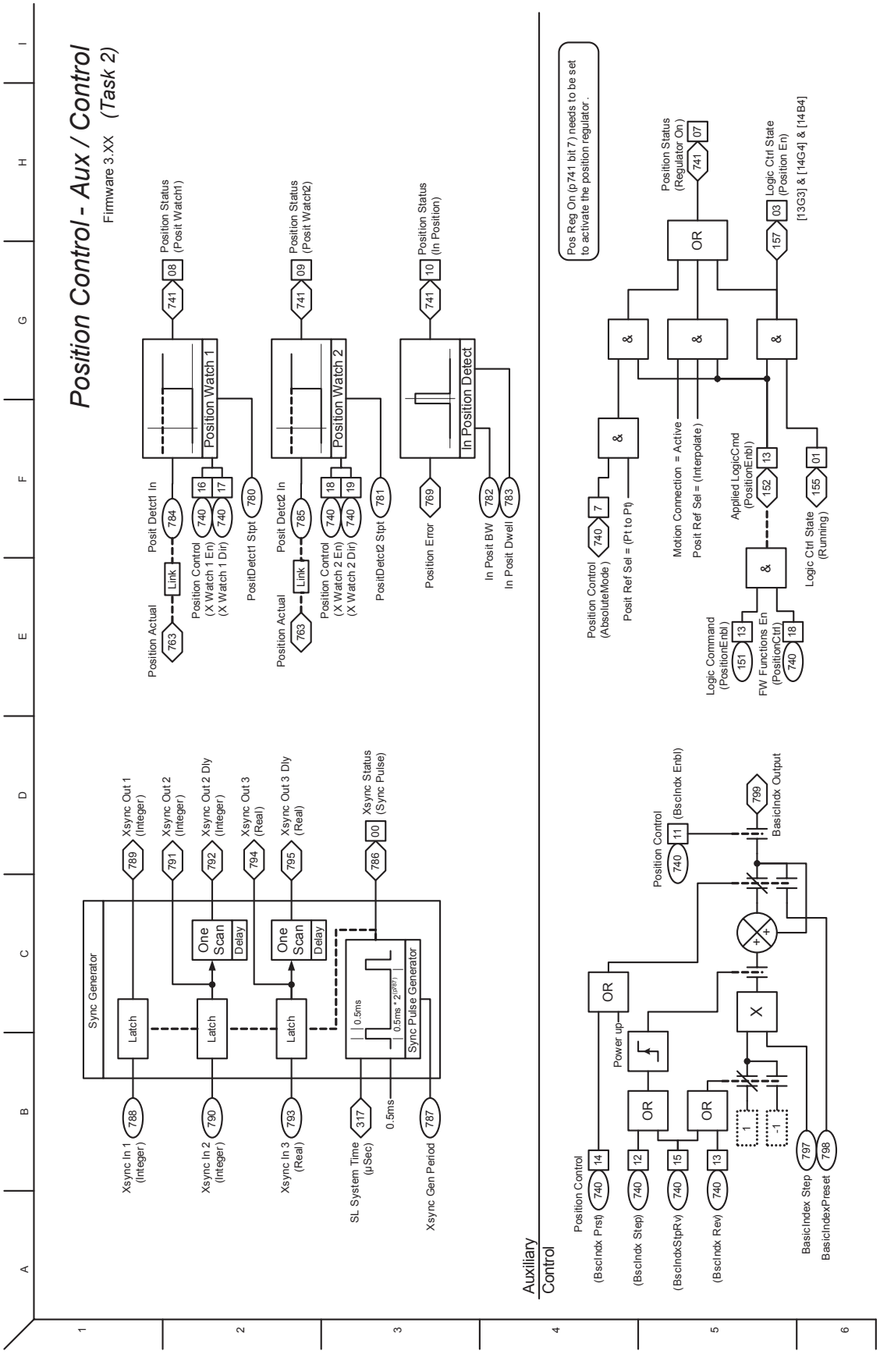

Inputs & Outputs - Digital
Firmware 3.XX (Task 1)
TB2-01 24 VDC Common
TB2-02 24 VDC
Digital Input Selections
0) Not Used
1) Enable
2) Clear Faults
3) Ext Fault
4) Norm Stop/CF
5) Start
6) Reverse
7) Run
8) Reserved
9) Reserved
10) Jog 1
11) Reserved
12) Reserved
13) Jog 2
14) Normal Stop
15) Spd Ref Sel0
16) Spd Ref Sel1
17) Spd Ref Sel2
18) CurLim Stop
19) Coast Stop
20) AccelDecel2
21) Bscdndx Step
22) BscdndxStpRv
23) MOP Inc
24) MOP Dec
25) MOP Reset
26) PI Trim En
27) PI Trim Hold
28) PI Trim Rst
29) Trend Trig
30) PreCharge En
31) Reserved
32) +Hrd OvrTrv
33) -Hrd OvrTrv
34) UserGen Sel0
35) UserGen Sel1
36) UserGen Sel2
37) UserGen Sel3
38) ExtFault Inv
Digital Output Selections
0) User Select
1) Not Fault
2) Not Alarm
3) Ready
4) Running
5) Reserved
6) Reserved
7) Enable On
8) Active
9) At Speed
10) At Setpt 1
11) Above Setpt2
12) At ZeroSpeed
13) Speed Limit
14) CurrentLimit
15) Torque Limit
16) Power Limit
17) Fault
18) Alarm
19) Command Dir
20) Actual Dir
21) Jogging
22) In Position
23) Posit Watch 1
24) Posit Watch 2
25) Cmpr 1 A </+B
26) Cmpr 1 A >/+B
27) Cmpr 2 A </+B
28) Cmpr 2 A >/+B
24vDC Inputs
{DI 1-3 Common}
TB2-09
TB2-10
TB2-11
TB2-12
24 vDC / 115vAC Inputs
S4 - Open for 115vAC
{DI 4-6 Common}
TB2-13
TB2-14
TB2-15
TB2-16
{Hw Enable}
Prt0/1 RegisCnfg
236
SynchLink
Bit Filter
Debounce
DigIn Debounce
Local I/O Status [DigIn 1]
Local I/O Status [DigIn 2]
Local I/O Status [DigIn 3]
Local I/O Status [DigIn 4]
Local I/O Status [DigIn 5]
Local I/O Status [DigIn 6]
Dig In1 Sel
Dig In2 Sel
Dig In3 Sel
Dig In4 Sel
Dig In5 Sel
Dig In6 Sel
Selector
Hw Enable Jumper
Bypass
Logic Status [Hw Enable On]
Local I/O Status [Hw Enbl Bypss]
When DI 6 is set for Hardware Enable, p830 is not available
Local I/O Status (Dig Out 1)
Local I/O Status (Dig Out 2)
Local I/O Status (Relay Out 3)
Delay
Dig Out1 On Time
Dig Out1 Off Time
Dig Out2 On Time
Dig Out2 Off Time
Rly Out On Time
Rly Out Off Time
Dig Out1 Data
Dig Out1 Bit
Dig Out1 Sel
Dig Out2 Data
Dig Out2 Bit
Dig Out2 Sel
Rly Out3 Data
Rly Out3 Bit
Rly Out3 Sel
Dflt = 3
Dflt = 8
Dflt = 1
TB2-03
TB2-04
TB2-05
TB2-06
TB2-07
TB2-08

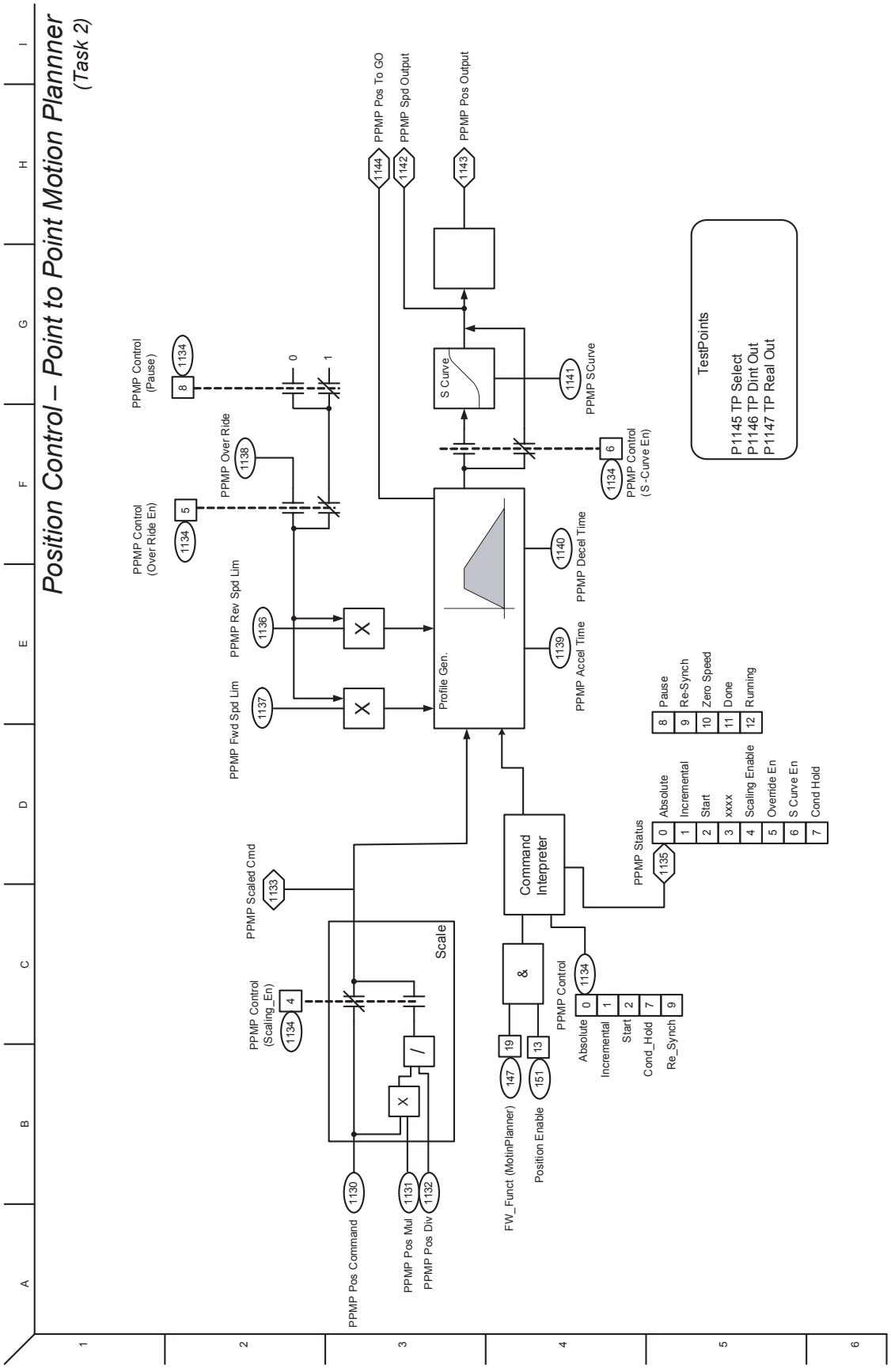

Inputs & Outputs - Analog
Firmware 3.XX (Task 1)
Analog Output Selections
0) User Select
1) Output Freq
2) Sel Spd Ref
3) Output Curr
4) Trq Cur Iq
5) % Motor Flux
6) Output Power
7) Output Volts
8) DC Bus Volts
9) PI Reference
10) PI Feedback
11) PI Error
12) PI Output
13) Reserved
14) Reserved
15) Motor TrqRef
User Defined
P310 Output Freq
P040 Selected Spd Ref
P308 Output Current
P499 Trq Cur fdbk (Iq)
P309 % Motor Flux
P311 Output Power
P307 Output Voltage
P306 DC Bus Voltage
P181 PI Reference
P182 PI Feedback
P183 PI Error
P180 PI Output
P303 Motor Torque Ref
16) MtrTrqCurrRef
17) Speed Ref
18) Speed Fdbk
19) Torque Est
20) Scl Spd Fdbk
21) RampedSpdRef
22) Spd Reg Out
23) MOP Level
24) Trend 1 Dint
25) Trend 1 Real
26) Trend 2 Dint
27) Trend 2 Real
P305 Mtr Trq Curr Ref
P301 Motor Speed Ref
P071 Filtered SpdFdbk
P471 Estimated Torque
P072 Scaled Spd Fdbk
P043 Ramped Spd Ref
P302 Spd Reg PI Out
P109 MOP Level Real
P572 Trend Out1 DInt
P573 Trend Out1 Real
P576 Trend Out2 DInt
P577 Trend Out2 Real
TB1-13
TB1-14
TB1-15
+10v Ref
Ref Common
-10v Ref
Analog I/O Units (AI1 Current)
821
00
TB1-01
TB1-02
A/D 14bit
Anlg In1 Offset
803
Anlg In1 Data
800
Anlg In1 Value
801
(kn * s)+ wn / s + wn
Lead Lag
Anlg In1 Scale
802
AI 1 Filt Gain
804
Anlg In1 Filt BW
805
TB1-03
Shield
Analog I/O Units (AI2 Current)
821
01
TB1-04
TB1-05
A/D 14bit
Anlg In2 Offset
809
Anlg In2 Data
806
Anlg In2 Value
807
(kn * s)+ wn / s + wn
Lead Lag
Anlg In2 Scale
808
AI 2 Filt Gain
810
Anlg In2 Filt BW
811
Analog I/O Units (AI3 Thermstr)
821
02
TB1-06
TB1-07
A/D 10bit
Anlg In3 Offset
815
Anlg In3 Data
812
Anlg In3 Volts
813
(kn * s)+ wn / s + wn
Lead Lag
Anlg In3 Scale
814
AI 3 Filt Gain
816
Anlg In3 Filt BW
817
TB1-08
Shield
Analog Input Filter Settings
Gain
BW
Light Filter
0.25
50
Heavy Filter
0.1
10
TB1-08
Shield
Anlg Out1 DInt
832
Anlg Out1 Real
833
Dflt = 18
Anlg Out1 Sel
831
Selector
Anlg Out1 Offset
834
Anlg Out1 Scale
835
10 [x]
1 / [x]
Limit
X
Anlg Out1 Zero
836
Analog I/O Units (AO1 Current)
821
16
D/A 12bit
TB1-09
TB1-10
Anlg Out1 Value
837
Anlg Out2 DInt
839
Anlg Out2 Real
840
Dflt = 3
Anlg Out2 Sel
838
Selector
Anlg Out2 Offset
841
Anlg Out2 Scale
842
10 [x]
1 / [x]
Limit
X
Anlg Out2 Zero
843
Analog I/O Units (AO2 Current)
821
17
D/A 12bit
TB1-11
TB1-12
Anlg Out2 Value
844

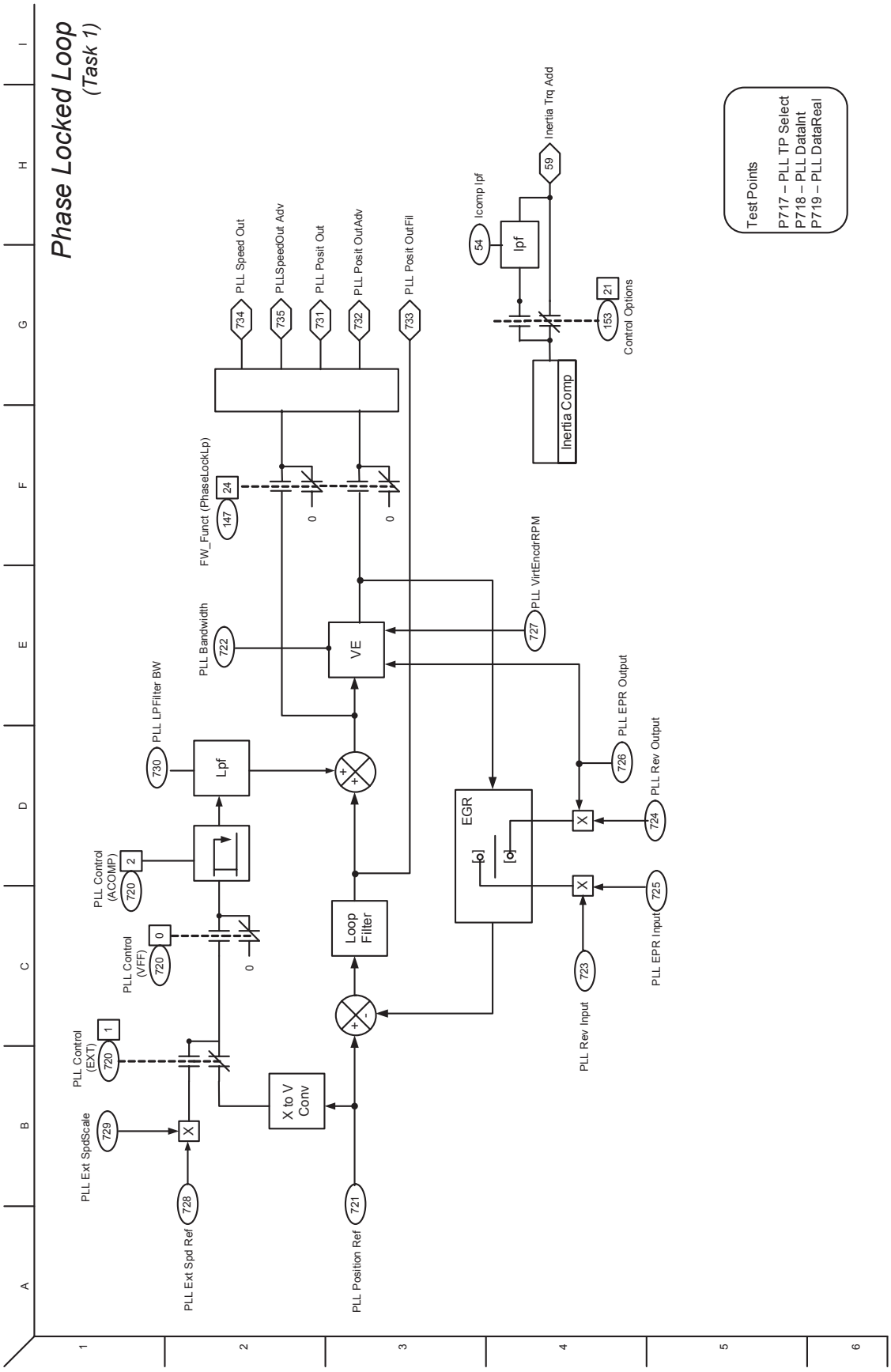

Control Logic
Firmware 3.XX (Task 3)
Enable Circuit
Dig In1 Sel
Dig In2 Sel
Dig In3 Sel
Dig In4 Sel
Dig In5 Sel
Dig In6 Sel
val = "Enable"
High (1)
Dig In1
Dig In2
Dig In3
Dig In4
Dig In5
Dig In6
&
Logic Status [Enable On]
to Software Enable Control
Logic Status [Hw Enable On]
to Hardware Enable Circuit
Local I/O Status [Hw Enbl Byps]
Hw Enable Jumper
Bypass
When p824 bit 0 is low, p830 is not available and Dig In6 is used for Hardware Enable exclusively
FromDriveLogix00
from DriveLogix
Drv Mounted HIM
External DPI Connection
Aux. External DPI Connection
Internal DPI Comm Device
Digital Inputs
Port 7
Port 1
Port 2
Port 3
Port 5
Port 0
Logic Command
Logic Parser
Masks
Owners
Applied LogicCmd
Drive Logic Rslt
TestPoints
P161 Logic TP Sel
P162 Logic TP Data
Note:
The following parameters are typically referenced when configuring or monitoring Control Logic;
p155 [Logic Status]
p156 [Start Inhibits]
Logic Mask
Start Mask
Jog Mask
Direction Mask
Fault Clr Mask
Stop Owner
Start Owner
Jog Owner
Direction Owner
Fault Clr Owner
SpdRamp Dsbl
Spd S Crv En
TachLoss Rst
Time Axis En
SpdRamp Hold
SReg IntgHld
SReg IntgRst
Ext FltAlm
Inertia Comp
Frict Comp
PI Trim En
Position En
PI Trim Hold
PI Trim Rst
Normal Stop
Start
Jog 1
Clear Fault
Forward
Reverse
Jog 2
CurrLim Stop
Coast Stop
Spd Ref Sel0
Spd Ref Sel1
Spd Ref Sel2
Reserved

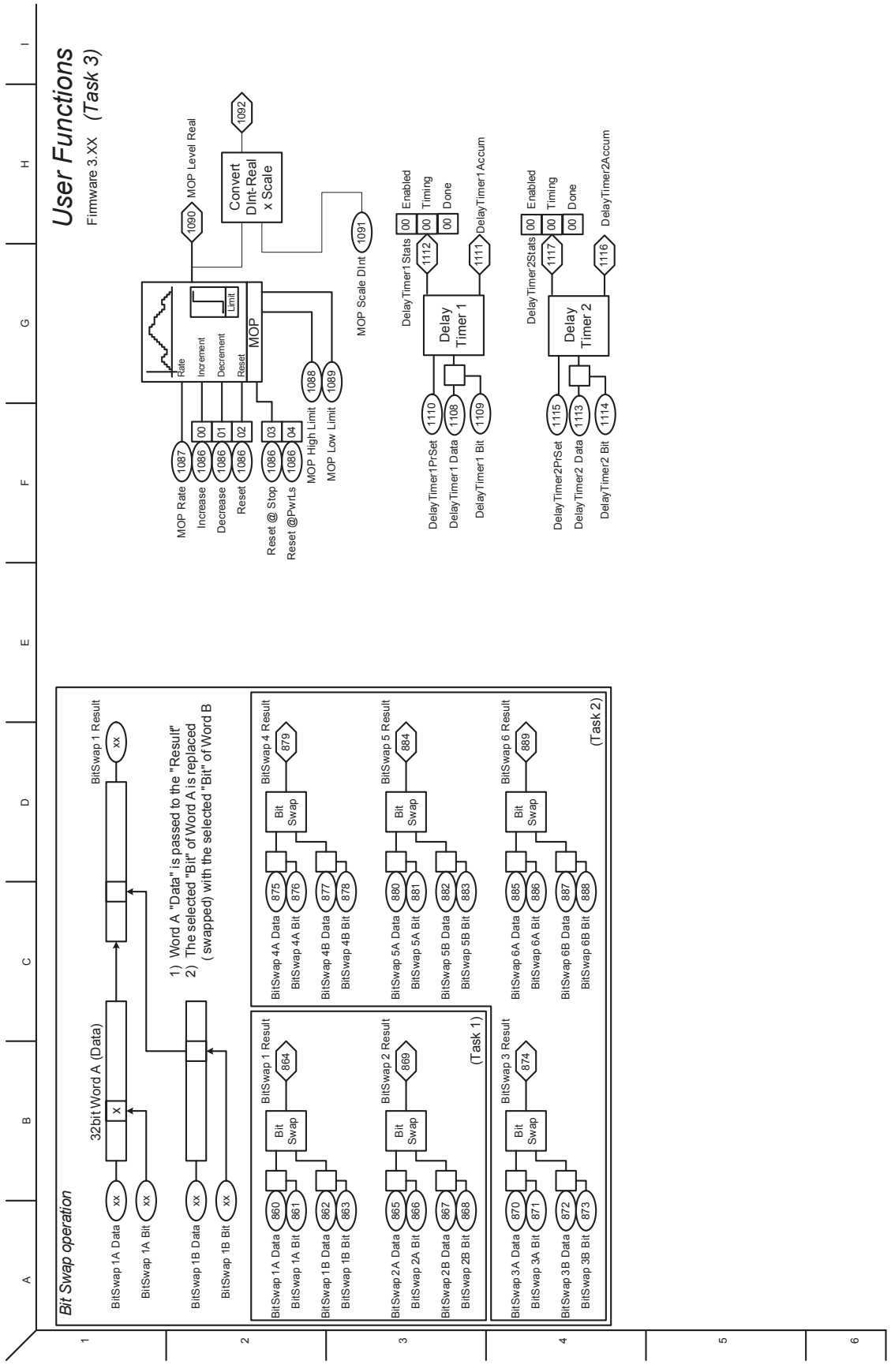

Position Control - Interp/Direct
Firmware 2.XX (Task 2)
Interpolator
Interp Accel/Rate
Interp Speed
Posit Ref Sel
Interp Position
Aux Posit Ref
See Point-to-Point Position Control Diagram page 8.
Interp SyncInput
p786 or p700 must be linked to p693 for proper Interpolator operation
Coarse Spd Trgt
CoarsePosit Trgt
Position Control (Interp Rev)
Xsync Status (Sync Pulse)
Motn Posit Sync
Posit Offset 1
Posit Offset 2
Posit Offset Spd
Position Control (X Offset Pol)
Position Control (X Offset Ref)
Rate Lim
X Offst SpdFilt
Filter
LPass
Position Status (X OffRefActl)
PositRef EGR Mul
PositRef EGR Div
Gear Rat
* PositRef EGR Out
* Position Cmmd
Position Error
Calib Const
Position Actual
Position Fdbk
from Speed/Posit Fdbk [9H3]
Link
Posit Load Fdbk
Posit Gear Ratio
Motor Speed / Gear Output Spd
PositReg P Gain
P Gain
PositReg Integ
I Gain
XReg Integ LoLim
XReg Integ HiLim
XReg Integ Out
XReg Spd LoLim
XReg Spd HiLim
Limit
Position Status
PositReg Droop
Droop
Posit Actl Load
Posit FB EGR Mul
Posit FB EGR Div
Position Control (Integ En)
Position Control (Integ Hold)
Logic Ctrl State (position enable)
[15H5]
Inv
Posit Spd Output
to Speed Control - Regulator [5A2]
Notch
X Notch Attenu
X Notch FiltFreq
[15H5] Logic Ctrl State (position enable)
Output Enable
This point is a delta change When the position loop is first enabled the position command and feedback delta are zero
* Position Control Xzero Preset
Abs Posit Offset
On the rising edge (activation) of p741 bit 7 [15H5] the following bit assignments occur:
1) If p740 bit 8 is set, then p763, p765, p744, and p747 get loaded with [Position Fdbk (p762) - Abs Posit Offset (p757)].
2) If p740 bit 8 is reset, then p763 , p765, p744, and p747 get loaded with the reference value (prior to reference derivative function in coordinate [D2]).

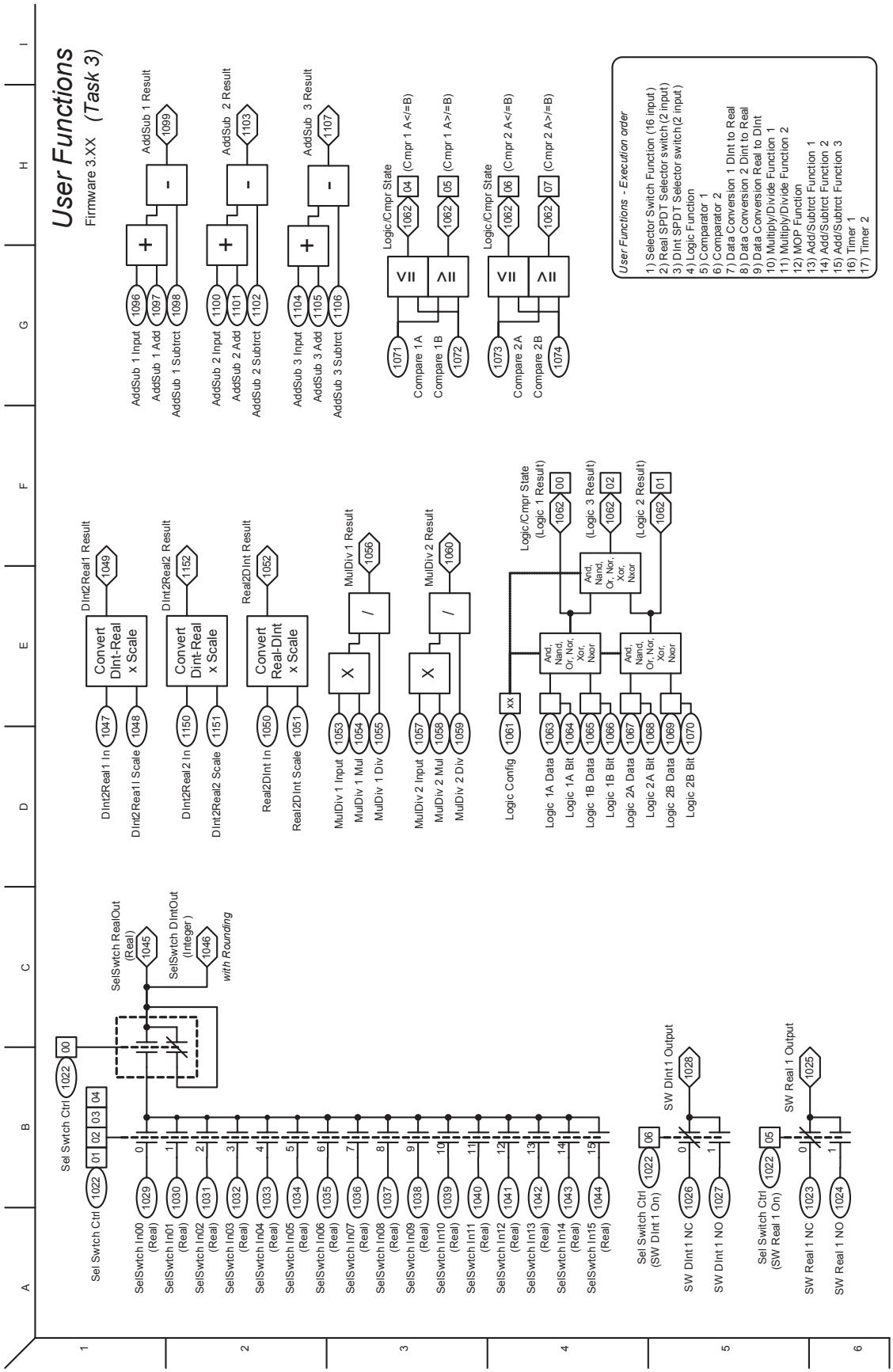

Position Control - Point-to-Point
Firmware 3.XX (Task 2)
Position Control AbsPositCtrl 740 06 Position Control SetZeroPosit 740 09
1) Parameter 740 b06 may be set when a multi-turn absolute feedback device is used for Point to Point positioning. Activating p740 b06 will ReRef the position reference to the absolute feedback when position control is activated (p741 b07). If the value at p758 is different than the feedback in 763 a position error will exist and the machine will move to position when activated.
2) When p740 b06 is high the [SetZeroPosit] p740 b09 may be used to set the zero "home" position accumulators. This can only be used when the drive is not in run and p740 b06 = 1.
3) When p740 b06 is high, p745 & p746 are bypassed. In absolute mode the point to point position regulator can only use raw counts as position command.
This point is a delta change. When the position loop is first enabled the position command and feedback delta are zero.
* Position Control Xzero Preset 740 08 Abs Posit Offset 757
On the rising edge (activation) of p741 bit 7 [15H5] the following bit assignments occur:
1) If p740 bit 8 is set, then p763, p765, p744, and p747 get loaded with [Position Fdbk (p762) - Abs Posit Offset (p757)].
2) If p740 bit 8 is reset, then p763, p765, p744, and p747 get loaded with the reference value (prior to reference derivative function in coordinate [D2]).
Position Cmmd 747
PositRef EGR Out 744
Position Control AbsPositCtrl 740 06
[N] [D] Gear Ratio
PositRef EGR Mul 745
PositRef EGR Div 746
X Offst SpdFilt 756
Filter LPass
Rate Lim
Position Status (X OffRefAct) 741 05
Posit Offset 1 753
Posit Offset 2 754
Posit Offset Spd 755
Position Control (X Offset Pol) 740 04
Position Control (X Offset Ref) 740 05
Posit Ref Sel 742
See Interpolated/Direct Position Control Diagram Page 6
Pt-Pt Posit Ref 758
Reref
Position Control (Pt-Pt ReRef) 740 10
Position Status (PtPtRRef Act) 741 4
Position Fdbk 762
from Speed/Posit Fdbk [9H3]
Position Error 769
Motor Speed (Gear Output Spd)
Calib Const
Posit Gear Ratio 796
Point to Point Position
Limit
Position Status 741 02 (X Spd LLim) 741 03 (X Spd HLim)
Posit Spd Output 318
to Speed Control - Regulator [5A2]
PositReg P Gain 768
Pt-Pt Filt BW 761
Pt-Pt Accel Time 759
Pt-Pt Decel Time 760
Position Actual 763
from [15H5] Logic Ctrl State 157 03
OR
PositSpRef > 0.01
Position Control (Pt-PtRmpStop) 740 20
Speed Out Enable 740 01
X Notch Attenu 778
X Notch FiltFreq 779
Notch
XReg Spd LoLim 775
XReg Spd HiLim 776
Inv

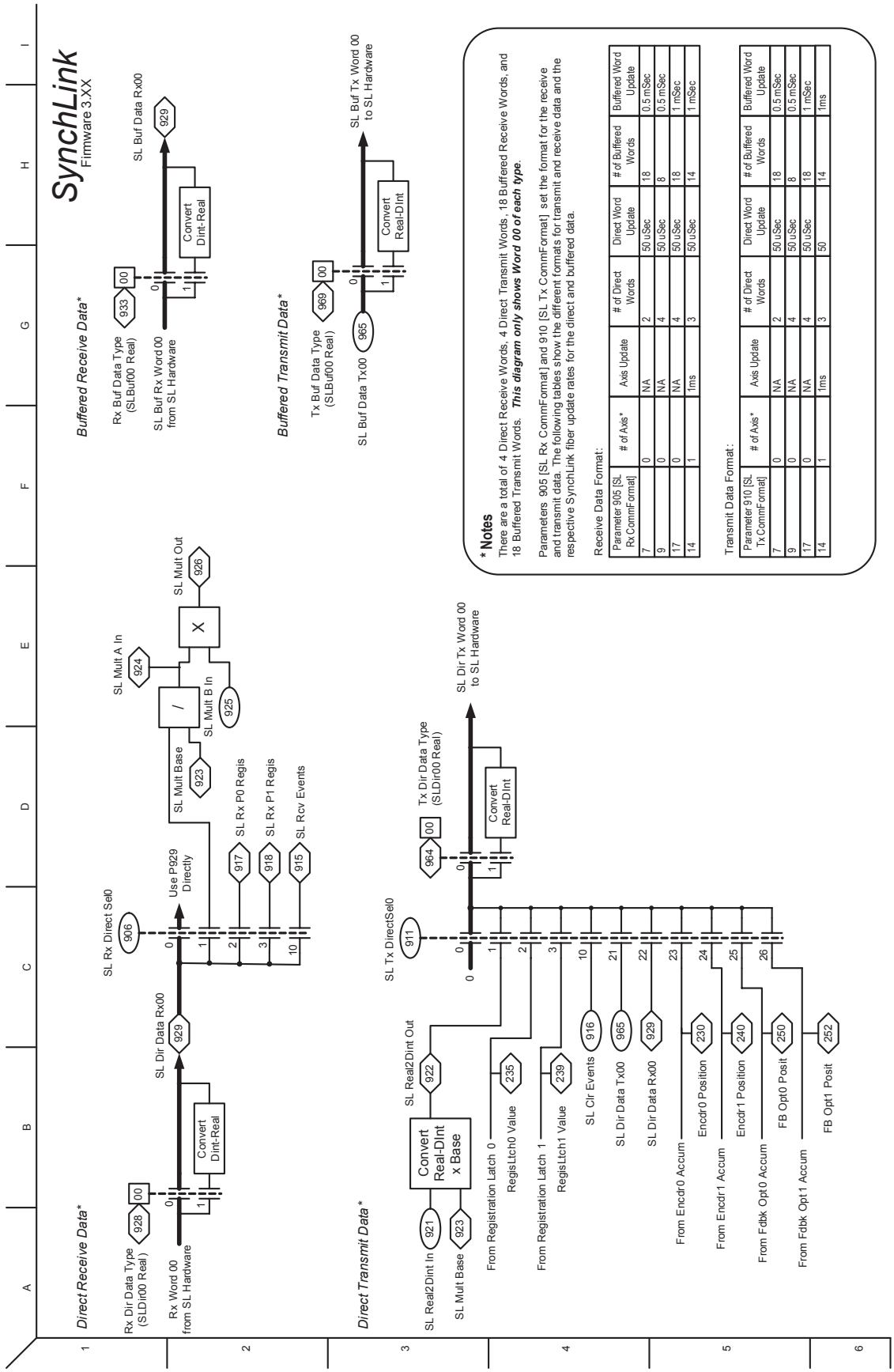

Position Control - Aux / Control
Firmware 3.XX (Task 2)
Position Watch 1
Position Watch 2
In Position Detect
Sync Generator
Latch
One Scan Delay
Sync Pulse Generator
Position Control (AbsoluteMode)
Posit Ref Sel = (Pt to Pt)
Motion Connection = Active
Posit Ref Sel = (Interpolate)
Pos Reg On (p741 bit 7) needs to be set to activate the position regulator.
Auxiliary Control
Power up
Position Control
BasicIndx Output


Position Control – Point to Point Motion Plannner
(Task 2)
PPMP Pos Command
1130
PPMP Pos Mul
1131
PPMP Pos Div
1132
Scale
PPMP Control
(Scaling_En)
1134
4
PPMP Scaled Cmd
1133
PPMP Control
(Over Ride En)
1134
5
PPMP Over Ride
1138
PPMP Control
(Pause)
1134
8
PPMP Fwd Spd Lim
1137
PPMP Rev Spd Lim
1136
Profile Gen.
PPMP Accel Time
1139
PPMP Decel Time
1140
S Curve
PPMP SCurve
1141
PPMP Control
(S -Curve En)
1134
6
PPMP Pos To GO
1144
PPMP Spd Output
1142
PPMP Pos Output
1143
TestPoints
P1145 TP Select
P1146 TP Dint Out
P1147 TP Real Out
FW_Funct (MotinPlanner)
147
Position Enable
151
19
13
&
Command
Interpreter
PPMP Control
1134
Absolute
Incremental
Start
Cond_Hold
Re_Synch
PPMP Status
1135
Absolute
Incremental
Start
xxxx
Scaling Enable
Override En
S Curve En
Cond Hold
Pause
Re-Synch
Zero Speed
Done
Running


Phase Locked Loop
(Task 1)
PLL Ext Spd Ref
728
PLL Ext SpdScale
729
PLL Control
(EXT)
720
1
PLL Control
(ACOMP)
720
2
PLL Control
(VFF)
720
0
PLL LPFilter BW
730
PLL Bandwidth
722
FW_Funct (PhaseLockLp)
147
24
PLL Position Ref
721
X to V
Conv
Lpf
Loop
Filter
VE
EGR
PLL VirtEncdrRPM
727
PLL Speed Out
734
PLLSpeedOut Adv
735
PLL Posit Out
731
PLL Posit OutAdv
732
PLL Posit OutFil
733
Icomp Ipf
54
Ipf
Inertia Trq Add
59
Inertia Comp
Control Options
153
21
PLL EPR Output
726
PLL Rev Output
724
PLL EPR Input
725
PLL Rev Input
723
Test Points
P717 – PLL TP Select
P718 – PLL DataInt
P719 – PLL DataReal


User Functions
Firmware 3.XX (Task 3)
Bit Swap operation
32bit Word A (Data)
BitSwap 1A Data
BitSwap 1A Bit
BitSwap 1B Data
BitSwap 1B Bit
BitSwap 1 Result
1) Word A "Data" is passed to the "Result"
2) The selected "Bit" of Word A is replaced
(swapped) with the selected "Bit" of Word B
BitSwap 1A Data 860
BitSwap 1A Bit 861
BitSwap 1B Data 862
BitSwap 1B Bit 863
BitSwap 1 Result 864
BitSwap 2A Data 865
BitSwap 2A Bit 866
BitSwap 2B Data 867
BitSwap 2B Bit 868
BitSwap 2 Result 869
BitSwap 3A Data 870
BitSwap 3A Bit 871
BitSwap 3B Data 872
BitSwap 3B Bit 873
BitSwap 3 Result 874
(Task 1)
BitSwap 4A Data 875
BitSwap 4A Bit 876
BitSwap 4B Data 877
BitSwap 4B Bit 878
BitSwap 4 Result 879
BitSwap 5A Data 880
BitSwap 5A Bit 881
BitSwap 5B Data 882
BitSwap 5B Bit 883
BitSwap 5 Result 884
BitSwap 6A Data 885
BitSwap 6A Bit 886
BitSwap 6B Data 887
BitSwap 6B Bit 888
BitSwap 6 Result 889
(Task 2)
Bit Swap
MOP Rate 1087
Increase 1086 00
Decrease 1086 01
Reset 1086 02
Reset @ Stop 1086 03
Reset @PwrLs 1086 04
MOP High Limit 1088
MOP Low Limit 1089
MOP Scale DInt 1091
MOP Level Real 1090
Convert DInt-Real x Scale
1092
Rate
Increment
Decrement
Reset
Limit
MOP
DelayTimer1 Stats 1112
DelayTimer1PrSet 1110
DelayTimer1 Data 1108
DelayTimer1 Bit 1109
Delay Timer 1
DelayTimer1Accum 1111
Enabled
Timing
Done
DelayTimer2Stats 1117
DelayTimer2PrSet 1115
DelayTimer2 Data 1113
DelayTimer2 Bit 1114
Delay Timer 2
DelayTimer2Accum 1116


User Functions
Firmware 3.XX (Task 3)
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
Sel Swtch Ctrl 1022
00
01
02
03
04
SelSwtch RealOut (Real) 1045
SelSwtch DIntOut (Integer) 1046
with Rounding
SelSwtch In00 (Real) 1029
SelSwtch In01 (Real) 1030
SelSwtch In02 (Real) 1031
SelSwtch In03 (Real) 1032
SelSwtch In04 (Real) 1033
SelSwtch In05 (Real) 1034
SelSwtch In06 (Real) 1035
SelSwtch In07 (Real) 1036
SelSwtch In08 (Real) 1037
SelSwtch In09 (Real) 1038
SelSwtch In10 (Real) 1039
SelSwtch In11 (Real) 1040
SelSwtch In12 (Real) 1041
SelSwtch In13 (Real) 1042
SelSwtch In14 (Real) 1043
SelSwtch In15 (Real) 1044
Sel Switch Ctrl (SW DInt 1 On) 1022 06
SW DInt1 NC 1026
SW DInt1 NO 1027
SW DInt 1 Output 1028
Sel Switch Ctrl (SW Real 1 On) 1022 05
SW Real 1 NC 1023
SW Real 1 NO 1024
SW Real 1 Output 1025
DInt2Real1 In 1047
DInt2Real1 Scale 1048
DInt2Real1 Result 1049
Convert DInt-Real x Scale
DInt2Real2 In 1150
DInt2Real2 Scale 1151
DInt2Real2 Result 1152
Convert DInt-Real x Scale
Real2DInt In 1050
Real2DInt Scale 1051
Real2DInt Result 1052
Convert Real-DInt x Scale
MulDiv 1 Input 1053
MulDiv 1 Mul 1054
MulDiv 1 Div 1055
MulDiv 1 Result 1056
MulDiv 2 Input 1057
MulDiv 2 Mul 1058
MulDiv 2 Div 1059
MulDiv 2 Result 1060
Logic Config 1061 xx
Logic 1A Data 1063
Logic 1A Bit 1064
Logic 1B Data 1065
Logic 1B Bit 1066
Logic 2A Data 1067
Logic 2A Bit 1068
Logic 2B Data 1069
Logic 2B Bit 1070
And, Nand, Or, Nor, Xor, Nxor
Logic/Cmpr State (Logic 1 Result) 1062 00
(Logic 3 Result) 1062 02
(Logic 2 Result) 1062 01
AddSub 1 Input 1096
AddSub 1 Add 1097
AddSub 1 Subtrct 1098
AddSub 1 Result 1099
AddSub 2 Input 1100
AddSub 2 Add 1101
AddSub 2 Subtrct 1102
AddSub 2 Result 1103
AddSub 3 Input 1104
AddSub 3 Add 1105
AddSub 3 Subtrct 1106
AddSub 3 Result 1107
Logic/Cmpr State 1062 04 (Cmpr 1 A<=B)
1062 05 (Cmpr 1 A>=B)
Compare 1A 1071
Compare 1B 1072
Logic/Cmpr State 1062 06 (Cmpr 2 A<=B)
1062 07 (Cmpr 2 A>=B)
Compare 2A 1073
Compare 2B 1074
User Functions - Execution order
1) Selector Switch Function (16 input)
2) Real SPDT Selector switch (2 input)
3) DInt SPDT Selector switch (2 input)
4) Logic Function
5) Comparator 1
6) Comparator 2
7) Data Conversion 1 DInt to Real
8) Data Conversion 2 DInt to Real
9) Data Conversion Real to DInt
10) Multiply/Divide Function 1
11) Multiply/Divide Function 2
12) MOP Function
13) Add/Subtrct Function 1
14) Add/Subtrct Function 2
15) Add/Subtrct Function 3
16) Timer 1
17) Timer 2



*** Notes**

There are a total of 4 Direct Receive Words, 4 Direct Transmit Words, 18 Buffered Receive Words, and 18 Buffered Transmit Words. ***This diagram only shows Word 00 of each type.***

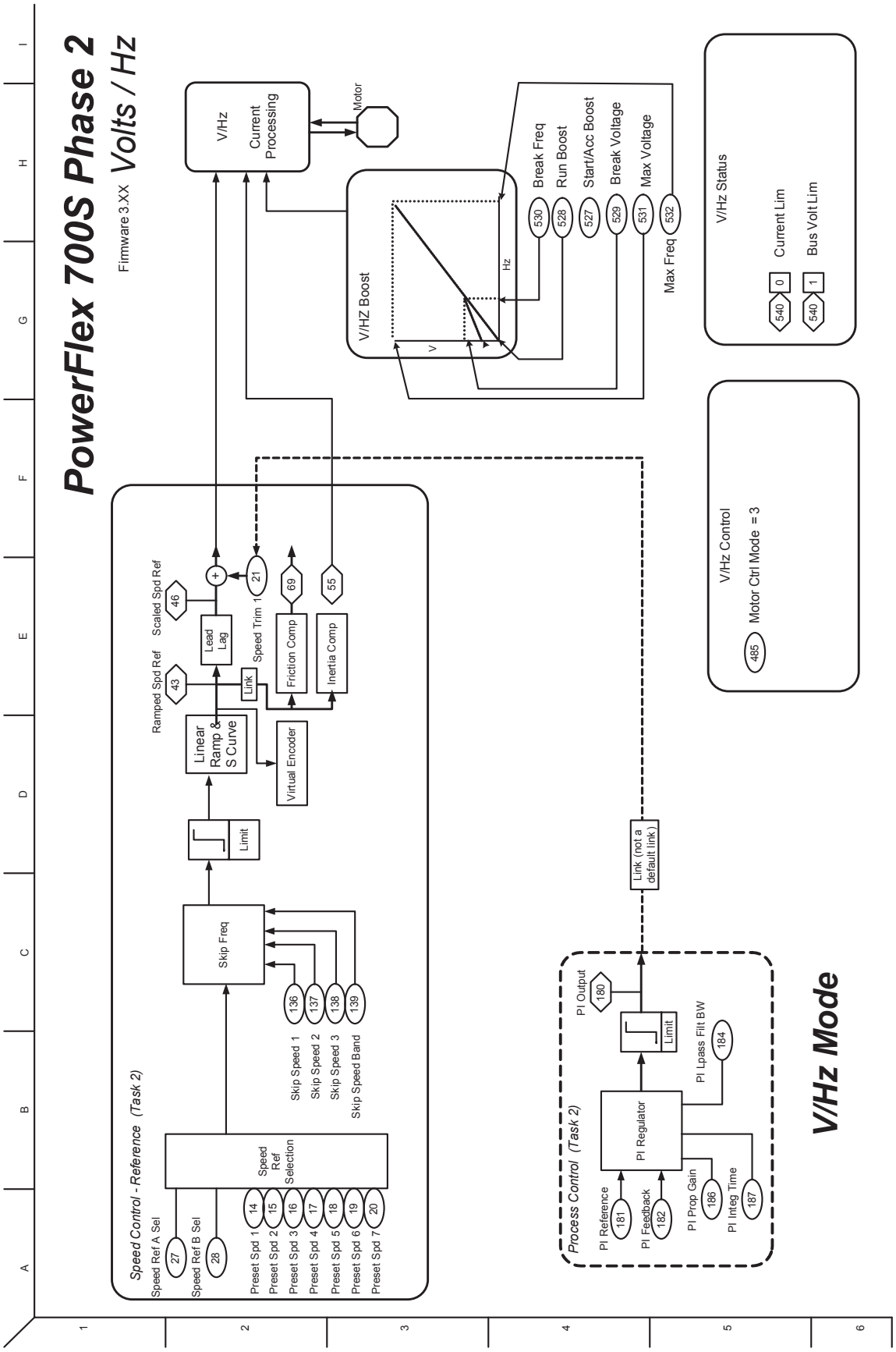
Parameters 905 [SL Rx CommFormat] and 910 [SL Tx CommFormat] set the format for the receive and transmit data. The following tables show the different formats for transmit and receive data and the respective SynchLink fiber update rates for the direct and buffered data.

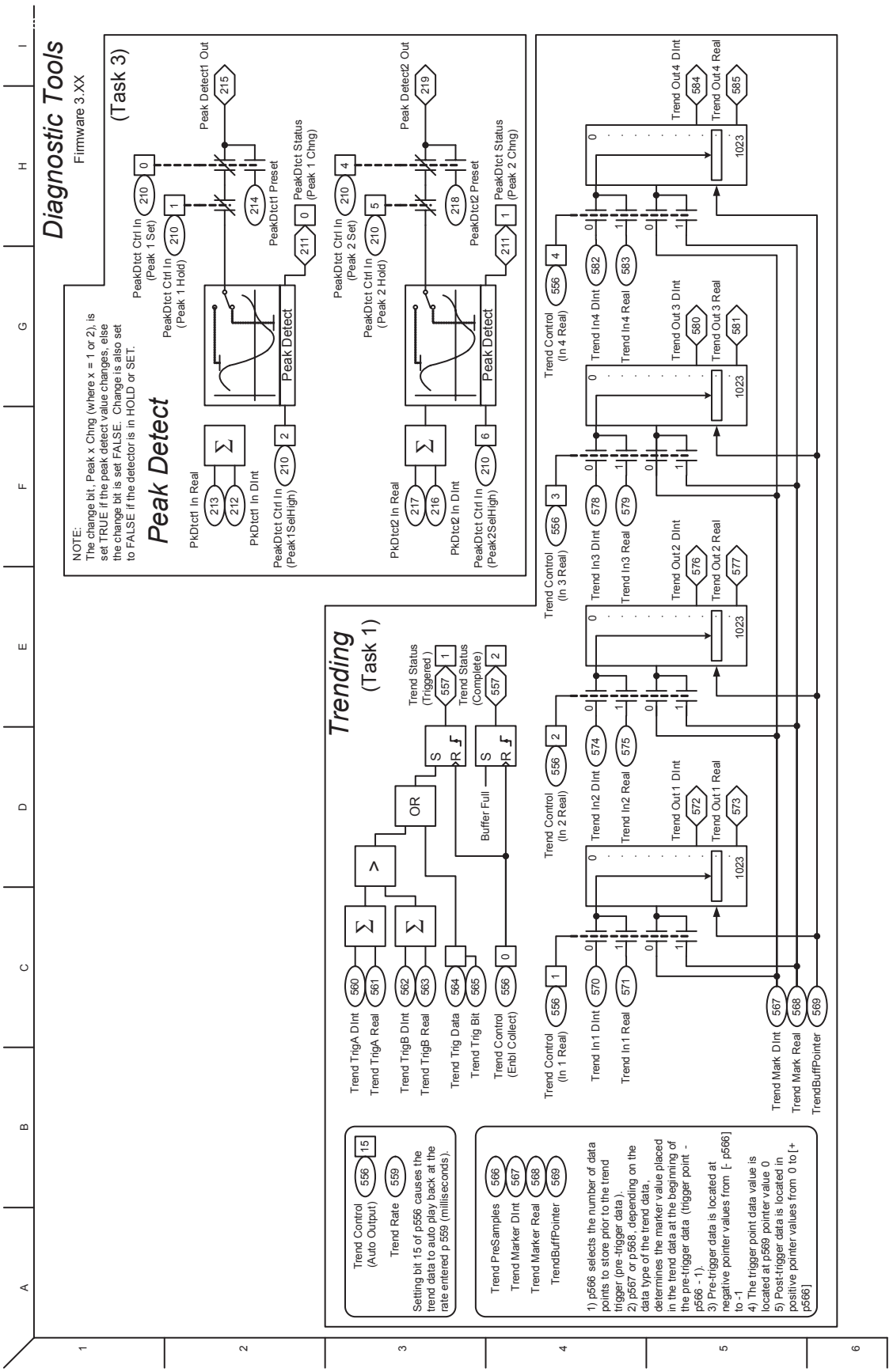
Receive Data Format:

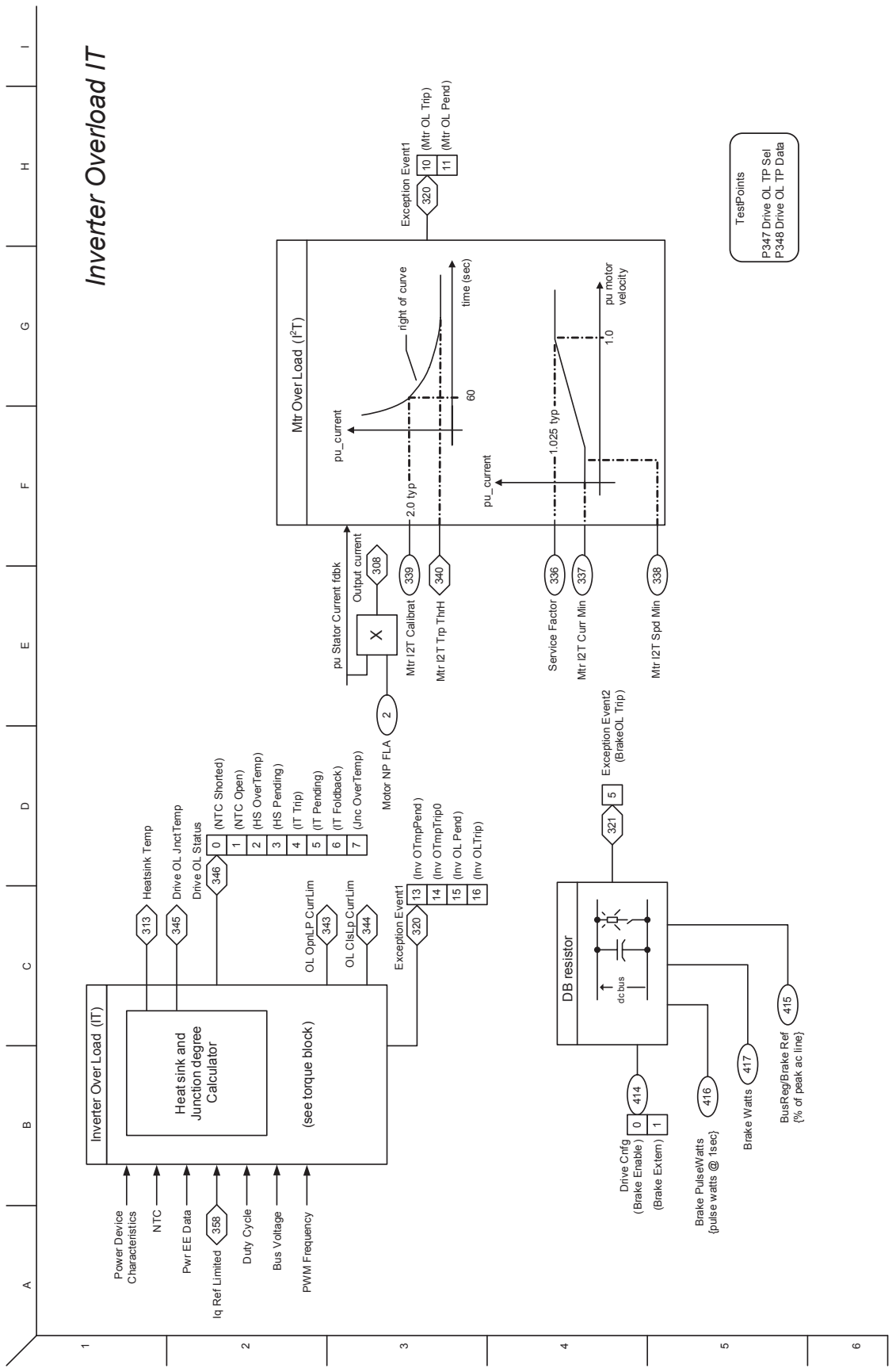
Parameter 905 [SL Rx CommFormat]	# of Axis*	Axis Update	# of Direct Words	Direct Word Update	# of Buffered Words	Buffered Word Update
7	0	NA	2	50 uSec	18	0.5 mSec
9	0	NA	4	50 uSec	8	0.5 mSec
17	0	NA	4	50 uSec	18	1 mSec
14	1	1ms	3	50 uSec	14	1 mSec

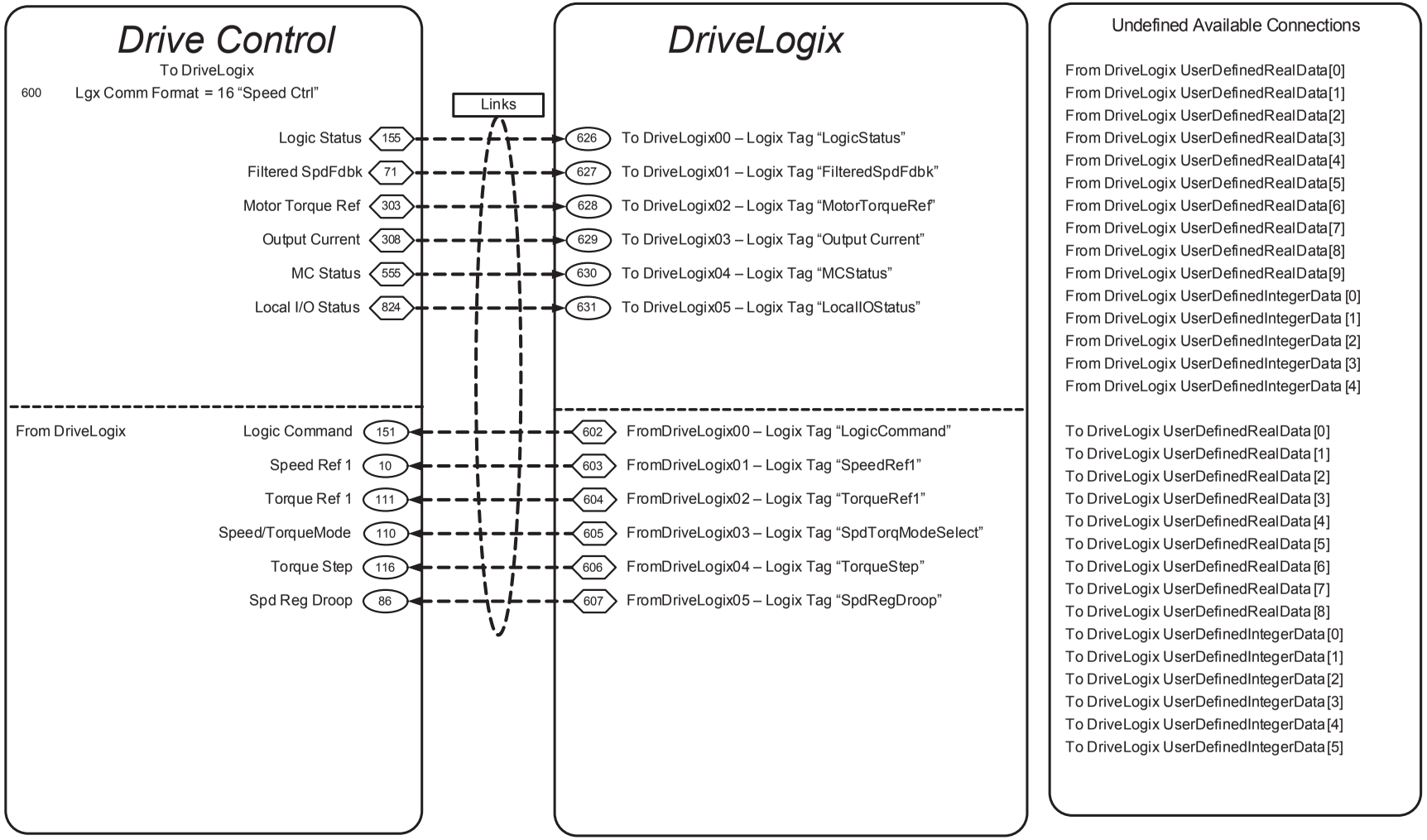
Transmit Data Format:

Parameter 910 [SL Tx CommFormat]	# of Axis*	Axis Update	# of Direct Words	Direct Word Update	# of Buffered Words	Buffered Word Update
7	0	NA	2	50 uSec	18	0.5 mSec
9	0	NA	4	50 uSec	8	0.5 mSec
17	0	NA	4	50 uSec	18	1 mSec
14	1	1ms	3	50	14	1ms


PowerFlex 700S Phase 2
Firmware 3.XX Volts / Hz
V/Hz Mode
Speed Control - Reference (Task 2)
Speed Ref A Sel
Speed Ref B Sel
Preset Spd 1
Preset Spd 2
Preset Spd 3
Preset Spd 4
Preset Spd 5
Preset Spd 6
Preset Spd 7
Speed Ref Selection
Skip Freq
Skip Speed 1
Skip Speed 2
Skip Speed 3
Skip Speed Band
Limit
Linear Ramp & S Curve
Virtual Encoder
Ramped Spd Ref
Link
Lead Lag
Scaled Spd Ref
Speed Trim 1
Friction Comp
Inertia Comp
Link (not a default link)
Process Control (Task 2)
PI Reference
PI Feedback
PI Prop Gain
PI Integ Time
PI Regulator
PI Lpass Filt BW
Limit
PI Output
V/Hz
Current Processing
Motor
V/HZ Boost
V
Hz
Break Freq
Run Boost
Start/Acc Boost
Break Voltage
Max Voltage
Max Freq
V/Hz Control
Motor Ctrl Mode = 3
V/Hz Status
Current Lim
Bus Volt Lim

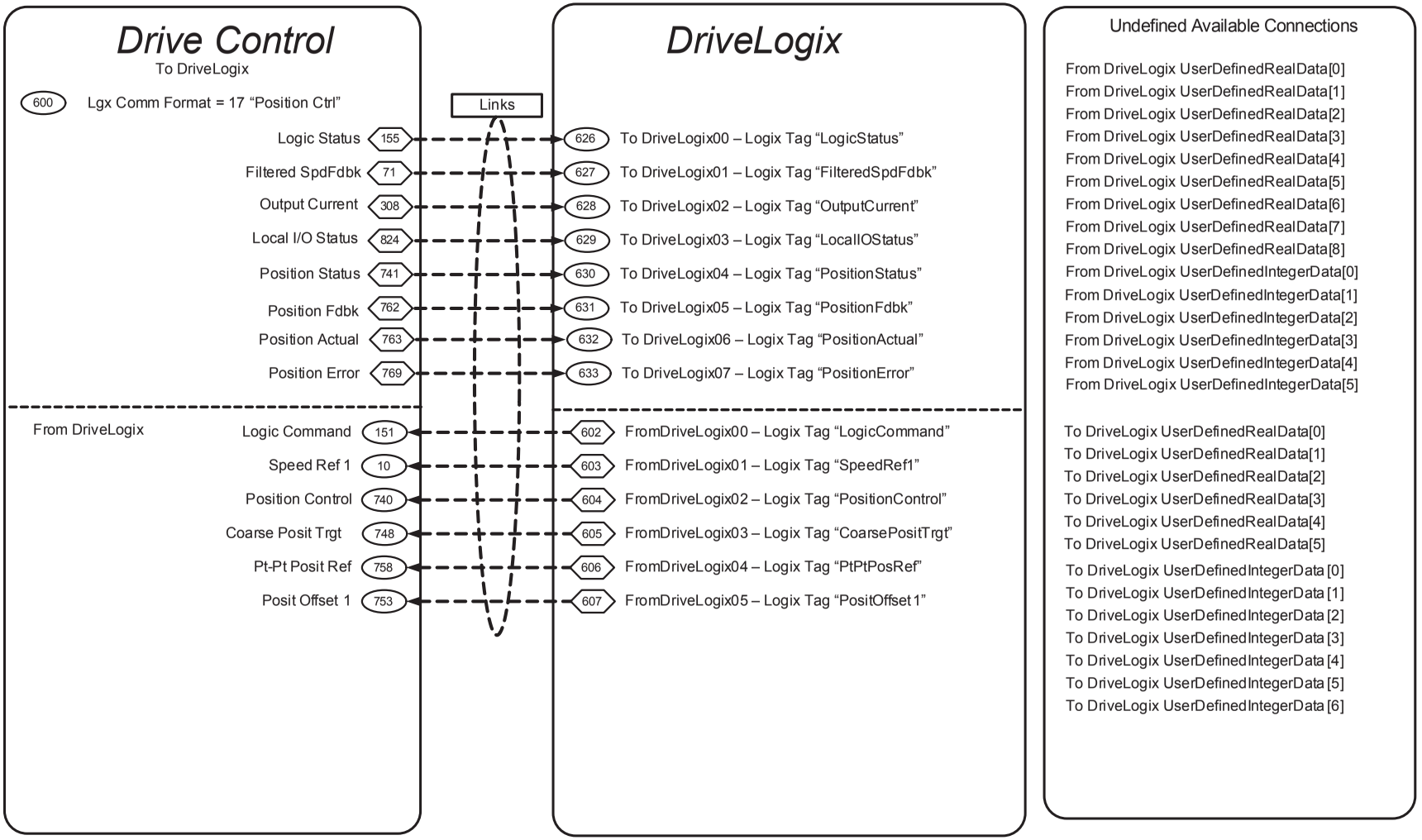

Diagnostic Tools
Firmware 3.XX
(Task 3)
NOTE:
The change bit, Peak x Chng (where x = 1 or 2), is set TRUE if the peak detect value changes, else the change bit is set FALSE. Change is also set to FALSE if the detector is in HOLD or SET.
Peak Detect
PkDtct1 In Real
PkDtct1 In DInt
PeakDtct Ctrl In (Peak1SelHigh)
PeakDtct Ctrl In (Peak 1 Set)
PeakDtct Ctrl In (Peak 1 Hold)
Peak Detect
Peak Detect1 Out
PeakDtct1 Preset
PeakDtct Status (Peak 1 Chng)
PkDtct2 In Real
PkDtct2 In DInt
PeakDtct Ctrl In (Peak2SelHigh)
PeakDtct Ctrl In (Peak 2 Set)
PeakDtct Ctrl In (Peak 2 Hold)
Peak Detect2 Out
PeakDtct2 Preset
PeakDtct Status (Peak 2 Chng)
Trending
(Task 1)
Trend TrigA DInt
Trend TrigA Real
Trend TrigB DInt
Trend TrigB Real
Trend Trig Data
Trend Trig Bit
Trend Control (Enbl Collect)
OR
Buffer Full
Trend Status (Triggered)
Trend Status (Complete)
Trend Control (In 1 Real)
Trend In1 DInt
Trend In1 Real
Trend Control (In 2 Real)
Trend In2 DInt
Trend In2 Real
Trend Control (In 3 Real)
Trend In3 DInt
Trend In3 Real
Trend Control (In 4 Real)
Trend In4 DInt
Trend In4 Real
Trend Out1 DInt
Trend Out1 Real
Trend Out2 DInt
Trend Out2 Real
Trend Out3 DInt
Trend Out3 Real
Trend Out4 DInt
Trend Out4 Real
Trend Mark DInt
Trend Mark Real
TrendBuffPointer
Trend Control (Auto Output)
Trend Rate
Setting bit 15 of p556 causes the trend data to auto play back at the rate entered p 559 (milliseconds).
Trend PreSamples
Trend Marker DInt
Trend Marker Real
TrendBuffPointer
1) p566 selects the number of data points to store prior to the trend trigger (pre-trigger data).
2) p567 or p568, depending on the data type of the trend data, determines the marker value placed in the trend data at the beginning of the pre-trigger data (trigger point - p566 - 1).
3) Pre-trigger data is located at negative pointer values from [- p566] to -1
4) The trigger point data value is located at p569 pointer value 0
5) Post-trigger data is located in positive pointer values from 0 to [+ p566]


Inverter Overload IT
Inverter Over Load (IT)
Heat sink and Junction degree Calculator
(see torque block)
Power Device Characteristics
NTC
Pwr EE Data
Iq Ref Limited
Duty Cycle
Bus Voltage
PWM Frequency
358
313
Heatsink Temp
345
Drive OL JnctTemp
Drive OL Status
346
0 (NTC Shorted)
1 (NTC Open)
2 (HS OverTemp)
3 (HS Pending)
4 (IT Trip)
5 (IT Pending)
6 (IT Foldback)
7 (Jnc OverTemp)
OL OpnLP CurrLim
343
OL ClsLp CurrLim
344
Exception Event1
320
13 (Inv OTmpPend)
14 (Inv OTmpTrip0)
15 (Inv OL Pend)
16 (Inv OLTrip)
Motor NP FLA
2
pu Stator Current fdbk
Output current
308
X
Mtr Over Load (I2T)
pu_current
right of curve
time (sec)
60
2.0 typ
Mtr I2T Calibrat
339
Mtr I2T Trp ThrH
340
pu_current
1.025 typ
pu motor velocity
1.0
Service Factor
336
Mtr I2T Curr Min
337
Mtr I2T Spd Min
338
Exception Event1
320
10 (Mtr OL Trip)
11 (Mtr OL Pend)
Exception Event2
(BrakeOL Trip)
321
5
DB resistor
dc bus
Drive Cnfg
(Brake Enable)
(Brake Extern)
0
1
414
Brake PulseWatts
{pulse watts @ 1sec}
416
Brake Watts
417
BusReg/Brake Ref
{% of peak ac line}
415
TestPoints
P347 Drive OL TP Sel
P348 Drive OL TP Data


Drive Control
To DriveLogix
600 Lgx Comm Format = 16 "Speed Ctrl"
Links
Logic Status 155
Filtered SpdFdbk 71
Motor Torque Ref 303
Output Current 308
MC Status 555
Local I/O Status 824
626 To DriveLogix00 – Logix Tag "LogicStatus"
627 To DriveLogix01 – Logix Tag "FilteredSpdFdbk"
628 To DriveLogix02 – Logix Tag "MotorTorqueRef"
629 To DriveLogix03 – Logix Tag "Output Current"
630 To DriveLogix04 – Logix Tag "MCStatus"
631 To DriveLogix05 – Logix Tag "LocalIOStatus"
From DriveLogix
Logic Command 151
Speed Ref 1 10
Torque Ref 1 111
Speed/TorqueMode 110
Torque Step 116
Spd Reg Droop 86
602 FromDriveLogix00 – Logix Tag "LogicCommand"
603 FromDriveLogix01 – Logix Tag "SpeedRef1"
604 FromDriveLogix02 – Logix Tag "TorqueRef1"
605 FromDriveLogix03 – Logix Tag "SpdTorqModeSelect"
606 FromDriveLogix04 – Logix Tag "TorqueStep"
607 FromDriveLogix05 – Logix Tag "SpdRegDroop"
DriveLogix
Undefined Available Connections
From DriveLogix UserDefinedRealData[0]
From DriveLogix UserDefinedRealData[1]
From DriveLogix UserDefinedRealData[2]
From DriveLogix UserDefinedRealData[3]
From DriveLogix UserDefinedRealData[4]
From DriveLogix UserDefinedRealData[5]
From DriveLogix UserDefinedRealData[6]
From DriveLogix UserDefinedRealData[7]
From DriveLogix UserDefinedRealData[8]
From DriveLogix UserDefinedRealData[9]
From DriveLogix UserDefinedIntegerData [0]
From DriveLogix UserDefinedIntegerData [1]
From DriveLogix UserDefinedIntegerData [2]
From DriveLogix UserDefinedIntegerData [3]
From DriveLogix UserDefinedIntegerData [4]
To DriveLogix UserDefinedRealData [0]
To DriveLogix UserDefinedRealData [1]
To DriveLogix UserDefinedRealData [2]
To DriveLogix UserDefinedRealData [3]
To DriveLogix UserDefinedRealData [4]
To DriveLogix UserDefinedRealData [5]
To DriveLogix UserDefinedRealData [6]
To DriveLogix UserDefinedRealData [7]
To DriveLogix UserDefinedRealData [8]
To DriveLogix UserDefinedIntegerData [0]
To DriveLogix UserDefinedIntegerData [1]
To DriveLogix UserDefinedIntegerData [2]
To DriveLogix UserDefinedIntegerData [3]
To DriveLogix UserDefinedIntegerData [4]
To DriveLogix UserDefinedIntegerData [5]

PowerFlex 700S Phase 2

Firmware 3.XX *DriveLogix-Position Control*



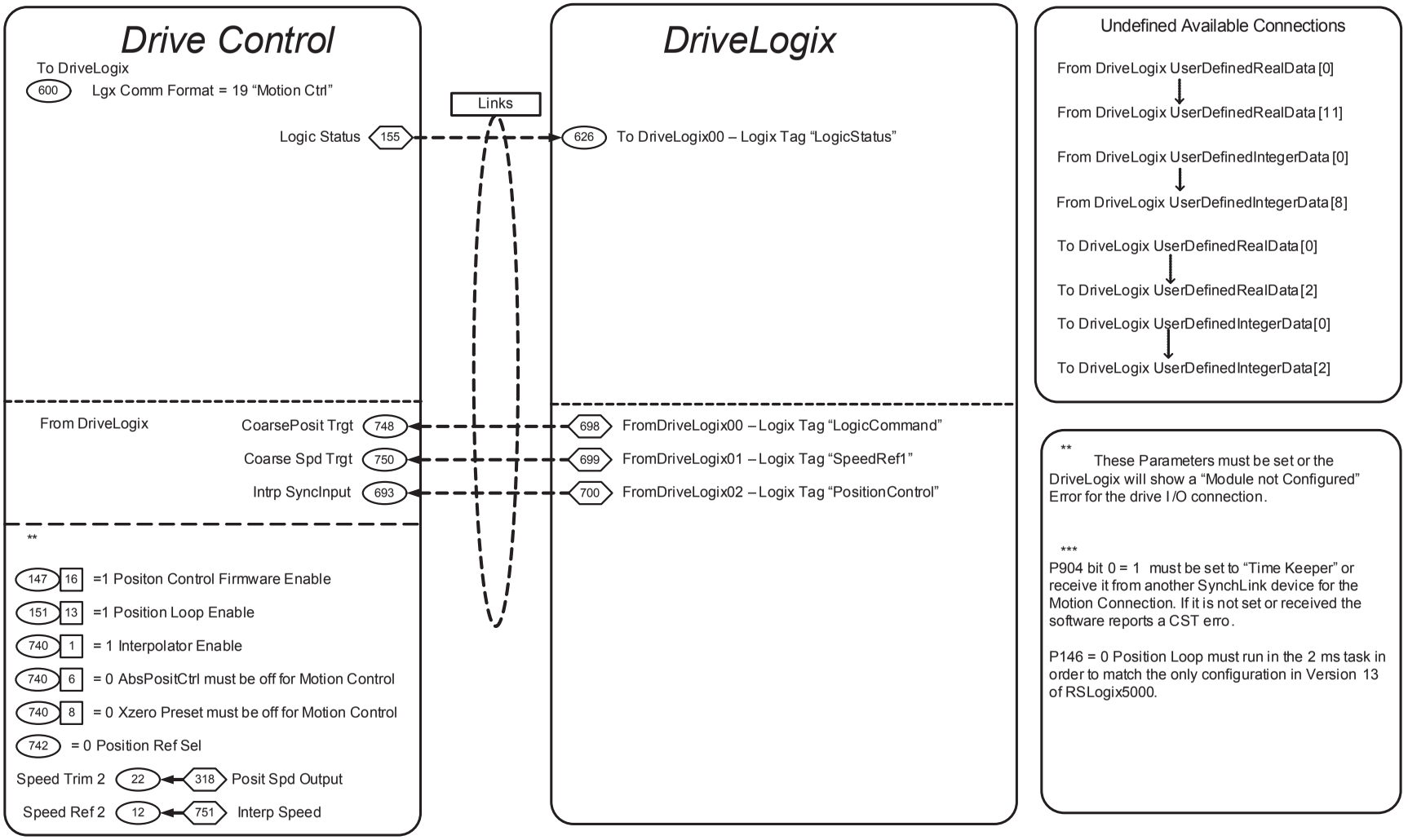
Undefined Available Connections

From DriveLogix UserDefinedRealData[0]
From DriveLogix UserDefinedRealData[1]
From DriveLogix UserDefinedRealData[2]
From DriveLogix UserDefinedRealData[3]
From DriveLogix UserDefinedRealData[4]
From DriveLogix UserDefinedRealData[5]
From DriveLogix UserDefinedRealData[6]
From DriveLogix UserDefinedRealData[7]
From DriveLogix UserDefinedRealData[8]
From DriveLogix UserDefinedIntegerData[0]
From DriveLogix UserDefinedIntegerData[1]
From DriveLogix UserDefinedIntegerData[2]
From DriveLogix UserDefinedIntegerData[3]
From DriveLogix UserDefinedIntegerData[4]
From DriveLogix UserDefinedIntegerData[5]

To DriveLogix UserDefinedRealData[0]
To DriveLogix UserDefinedRealData[1]
To DriveLogix UserDefinedRealData[2]
To DriveLogix UserDefinedRealData[3]
To DriveLogix UserDefinedRealData[4]
To DriveLogix UserDefinedRealData[5]
To DriveLogix UserDefinedIntegerData [0]
To DriveLogix UserDefinedIntegerData [1]
To DriveLogix UserDefinedIntegerData [2]
To DriveLogix UserDefinedIntegerData [3]
To DriveLogix UserDefinedIntegerData [4]
To DriveLogix UserDefinedIntegerData [5]
To DriveLogix UserDefinedIntegerData [6]

PowerFlex 700S Phase 2

Firmware 3.XX *DriveLogix-Motion Control*



Notes:

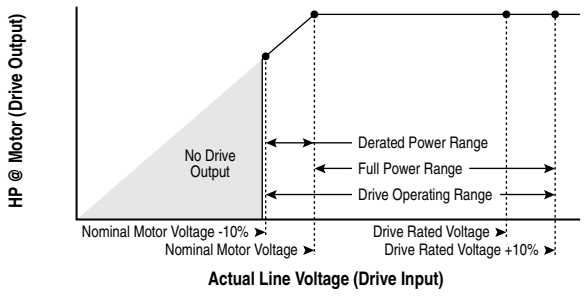
Application Notes

For additional application notes, refer to the *PowerFlex 700S Adjustable Frequency AC Drive with Phase II Control - Reference Manual*, publication PFLEX-RM003.

Input Voltage Range/ Tolerance

Drive Rating	Nominal Line Voltage	Nominal Motor Voltage	Drive Full Power Range	Drive Operating Range
200-240	200	200†	200-264	180-264
	208	208	208-264	
	240	230	230-264	
380-400	380	380†	380-528	342-528
	400	400	400-528	
	480	460	460-528	
500-600 *(Frames 1-4 Only)*	600	575†	575-660	432-660
500-690 *(Frames 5 & 6 Only)*	600	575†	575-660	475-759
	690	690	690-759	475-759

Drive Full Power Range =	Nominal Motor Voltage to Drive Rated Voltage + 10%. Rated current is available across the entire Drive Full Power Range
Drive Operating Range =	Lowest† Nominal Motor Voltage - 10% to Drive Rated Voltage + 10%. Drive Output is linearly derated when Actual Line Voltage is less than the Nominal Motor Voltage

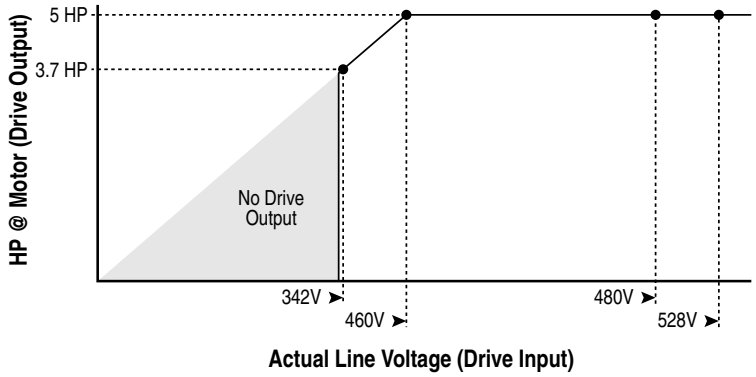


Example:

Calculate the maximum power of a 5 HP, 460V motor connected to a 480V rated drive supplied with 342V Actual Line Voltage input.

- Actual Line Voltage / Nominal Motor Voltage = 74.3%
- 74.3% × 5 HP = 3.7 HP
- 74.3% × 60 Hz = 44.6 Hz

At 342V Actual Line Voltage, the maximum power the 5 HP, 460V motor can produce is 3.7 HP at 44.6 Hz.



Motor Control Mode

Parameter 485 [Motor Ctrl Mode] selects the type of motor control to use. This parameter is set during the HIM assisted startup when asked to select the Motor Control. The settings for Parameter 485 [Motor Ctrl Mode] are

- 0 - "FOC" selects field oriented control. Field oriented control is used with AC squirrel cage induction motors for high performance.
- 1 - "FOC2" selects field oriented control and is only used for a specific type of AC induction motor with motor thermal feedback.
- 2 - "Pmag Motor" selects control for permanent magnet motors.
- 3 - "V/Hz" selects volts per hertz control. This selection is available in v2.003 and later.
- 4 - "Test" puts the drive in a test mode to perform the direction test. "Test" is automatically selected during the direction test portion of the Start-Up routine and does not need to be set manually by the user.

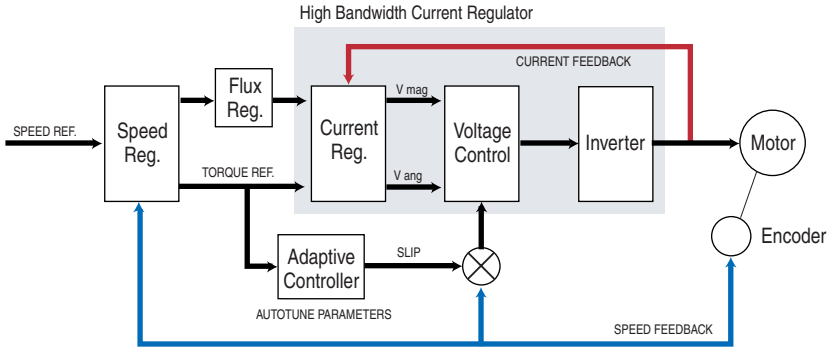
Field Oriented Control, Permanent Magnet Motor Control, and Volts/Hertz Control are described in further detail below.

Field Oriented Control

Field oriented control is used with AC squirrel cage induction motors for high performance. Motor data and an autotune is required for correct operation in this mode. Field oriented control is selected by setting parameter 485 [Motor Ctrl Mode] = 0 "FOC".

In field oriented control, the drive takes the speed reference that is specified by the Speed Reference Selection Block and compares it to the speed feedback. The speed regulator uses Proportional and Integral gains to adjust the torque reference for the motor. This torque reference attempts to operate the motor at the specified speed. The torque reference is then converted to the torque producing component of the motor current.

This type of speed regulator produces a high bandwidth response to speed command and load changes. In field oriented control the flux and torque producing currents are independently controlled. Therefore, you can send a torque reference directly instead of a speed reference. The independent flux control also allows you to reduce the flux in order to run above base motor speed.



Permanent Magnet Control

Permanent magnet control is used with permanent magnet motors. Permanent magnet motor control is selected by setting parameter 485 [Motor Ctrl Mode] = 2 "Pmag Motor".

- Permanent magnet motor control requires either a hi-resolution Stegmann encoder or compatible resolver feedback on the motor. Refer to PowerFlex 700S Stegmann Hi-Resolution Encoder Feedback Option on page F-1 for a list of compatible hi-resolution Stegmann encoders and compatible resolvers.
- Motor data and an autotune is required for correct operation in this mode. Refer to PowerFlex 700S Permanent Magnet Motor Specifications on page I-1 for a list of compatible Allen-Bradley permanent magnet motors and motor data to be used with the PowerFlex 700S.

Volts/Hertz Control - v2.003 and later

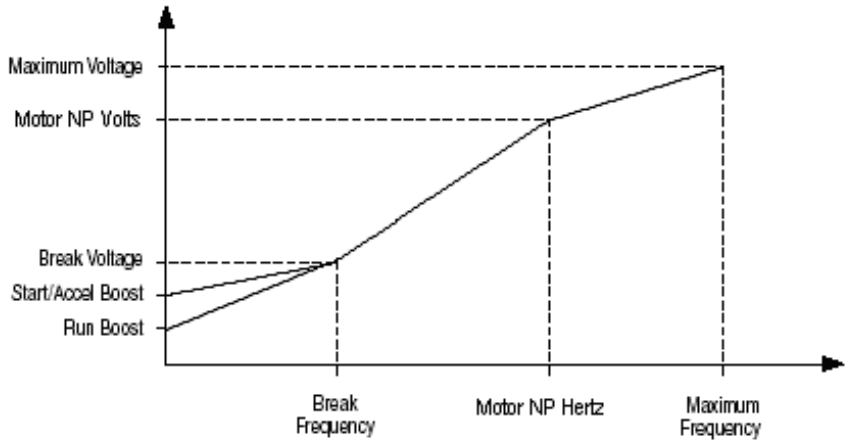
Volts/Hertz control is used in fan, pump, or multi-motor applications. Volts/Hertz operation creates a fixed relationship between output voltage and output frequency.

Configuration:

Volts/Hertz control is selected by setting parameter 485 [Motor Ctrl Mode] = 3 "V/Hz".

Volts/Hertz allows a wide variety of patterns using linear segments. The default configuration is a straight line from zero to rated voltage and frequency. This is the same volts/hertz ratio that the motor would see if it were started across the line. As seen in the diagram below, the volts/hertz ratio can be changed to provide increased torque performance when required. The shaping takes place by programming five distinct points on the curve:

1. Parameter 527 [Start/Acc Boost] is used to create additional torque for breakaway from zero speed and acceleration of heavy loads at lower speeds.
2. Parameter 528 [Run Boost] is used to create additional running torque at low speeds. The value is typically less than the required acceleration torque. The drive will lower the boost voltage to this level when running at low speeds (not accelerating). This reduces excess motor heating that could be caused if the higher start/accel boost level were used.
3. Parameters 529 [Break Voltage] and 530 [Break Frequency] are used to increase the slope of the lower portion of the Volts/Hertz curve, providing additional torque.
4. Parameters 1 [Motor NP Volts] and 3 [Motor NP Hertz] set the upper portion of the curve to match the motor design and mark the beginning of the constant horsepower region.
5. Parameters 531 [Maximum Voltage] and 532 [Maximum Freq] slope that portion of the curve used above base speed.

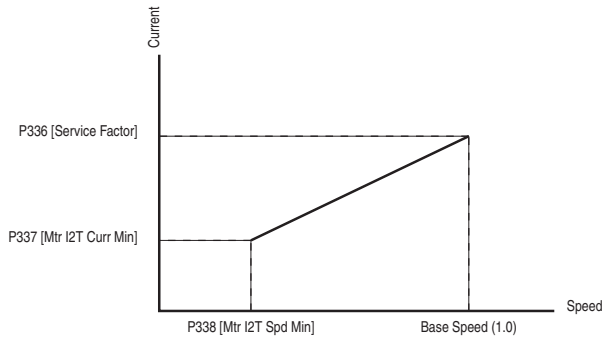


Motor Overload

Mtr I2T Spd Min

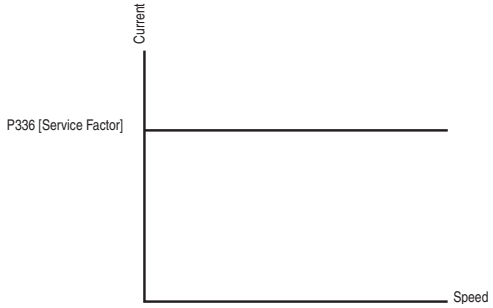
Sets the minimum speed for the motor overload (I^2T) function. The value indicates minimum speed below the minimum current threshold [Mtr I2T Curr Min], and these are the first current/speed breakpoint. From this point the current threshold is linear to the value specified by the motor service factor Par 336 [Motor OL Factor].

Figure C.1 Motor Overload Curve With Par 338 [Mtr I2T Spd Min] Is Less Than 1.0



When motor current exceeds the value of the curve, Mtr OL Output integrates. A motor overload exception event occurs when the value in Mtr OL Output reaches 1.0. The value of Mtr OL Output is visible in Par 330 [Fault TP Data] when the value of Par 329 [Fault TP Sel] equals 13.

Figure C.2 Motor Overload Curve With Par 338 [Mtr I2T Spd Min] Is Equal To 1.0



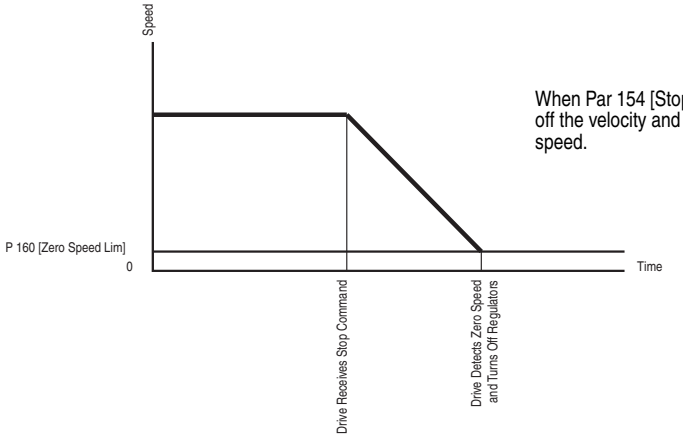
When the value of Par 338 [Mtr I2T Spd Min] equals 1.0, the curve is flat - at the value of rated motor current times the value of Par 336 [Motor OL Factor]. If motor current exceeds the value of the curve, the value of Mtr OL Output integrates. The value of Mtr OL Output is visible in Par 330 [Fault TP Data] when the value of Par 329 [Fault TP Sel] equals 13.

Stop Dwell Time

Sets an adjustable delay time between detecting zero speed and disabling the speed and torque regulators, when responding to a stop command.

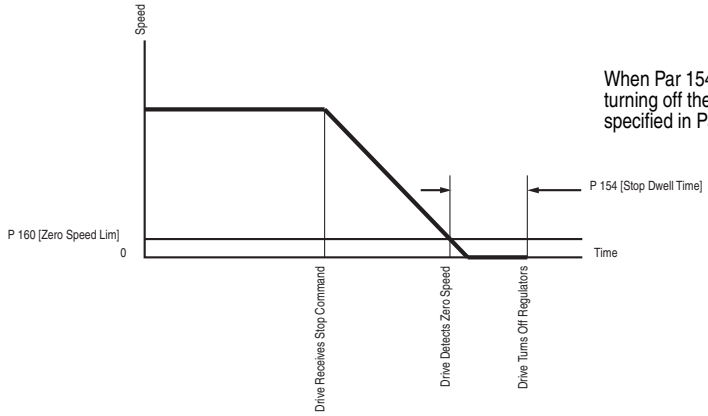
Important: Consult industry and local codes when setting the value of this parameter.

Figure C.3 Drive Operation When Par 154 [Stop Dwell Time] Equals Zero



When Par 154 [Stop Dwell Time] equals zero, the drive turns off the velocity and torque regulators when it detects zero speed.

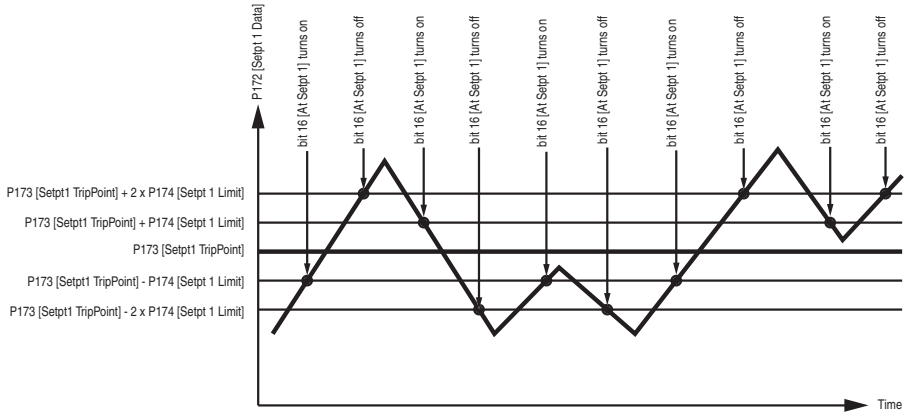
Figure C.4 Drive Operation When Par 154 [Stop Dwell Time] is Greater Than Zero



Setpt 1 Data

Provides data for comparison of Par 172 [Setpt 1 Data] to Par 173 [Setpt1 TripPoint], driving bit 16 [At Setpt 1] of Par 155 [Logic Status].

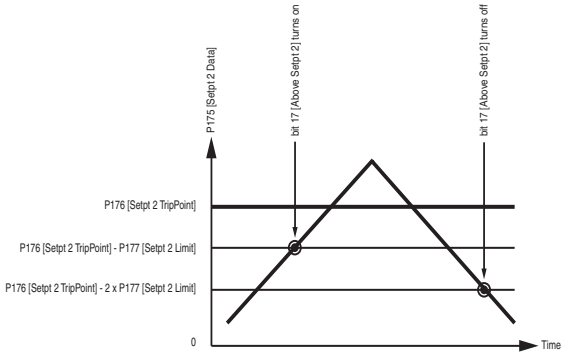
Figure C.5 At Setpoint 1 Status



Setpt 2 Data

Provides data for comparison of Par175 [Setpt 2 Data] to Par 176 [Setpt2 TripPoint], driving bit 17 [Above Setpt 2] of Par 155 [Logic Status].

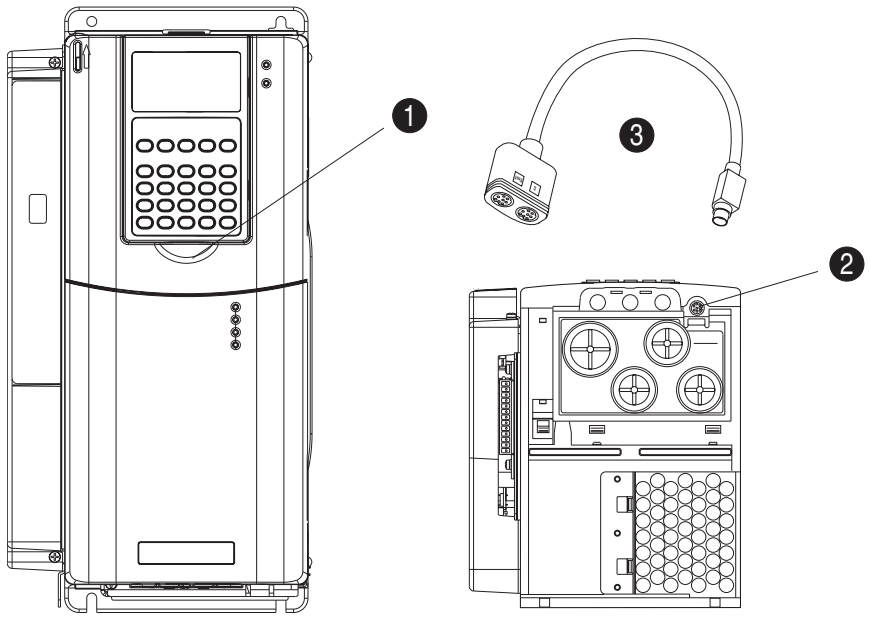
Figure C.6 Above Setpoint 2 Status



HIM Overview

External and Internal Connections

The PowerFlex 700S provides cable connection for a hand-held HIM or Port Expander/Splitter (Frame 1 shown).



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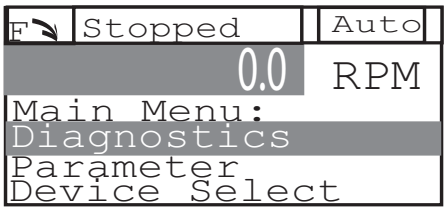
No.	Connector	Description
❶	DPI Port 1	HIM connection when installed in cover.
❷	DPI Port 2	Cable connection for handheld and remote options.
❸	DPI Port 3 or 2	Splitter cable connected to DPI Port 2 provides additional port.

LCD Display Elements

Display	Description
	Direction | Drive Status | Alarm | Auto/Manual | Information Commanded or Output Speed Programming / Monitoring / Troubleshooting

ALT Functions

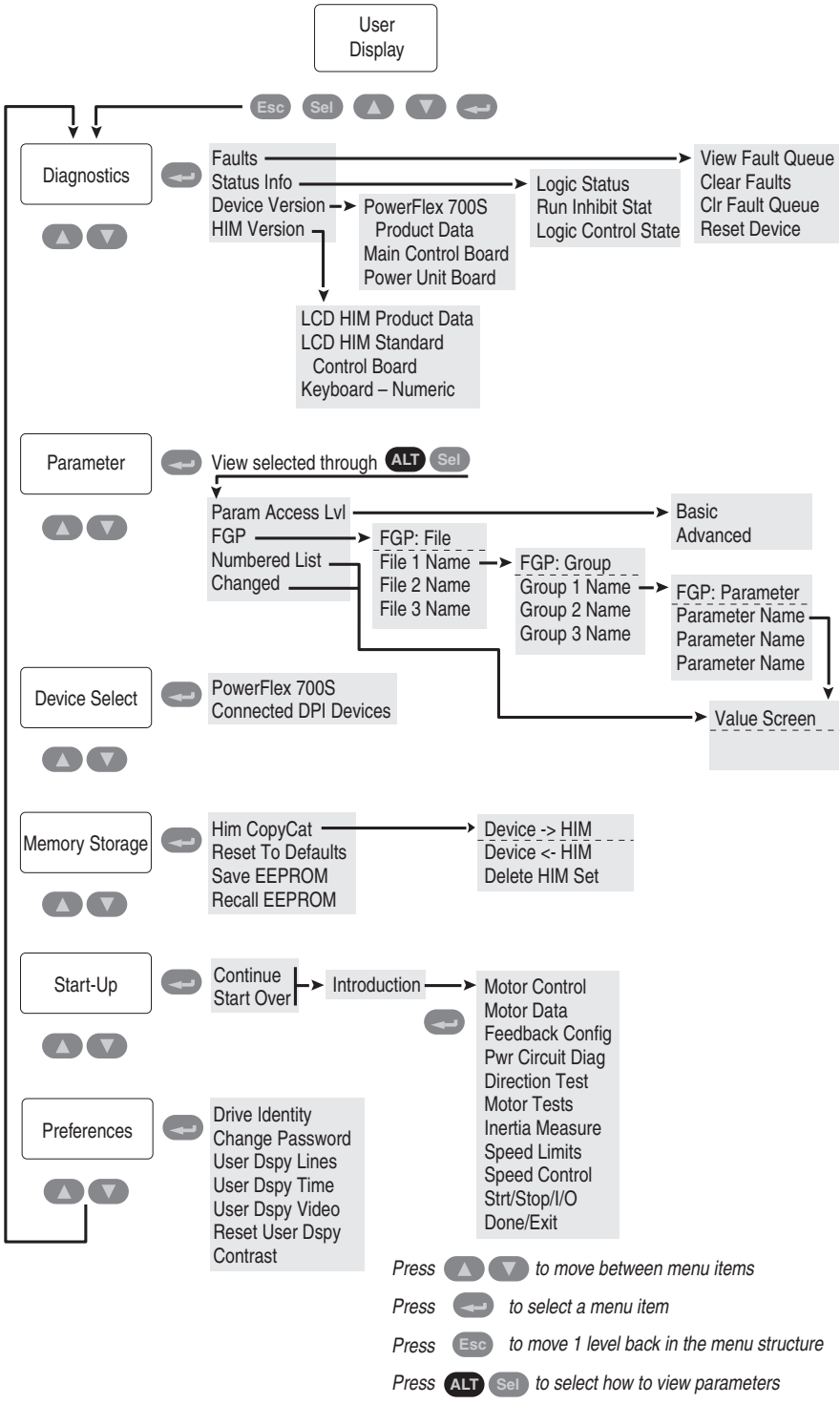
To use an ALT function, press the ALT key release it, then press the programming key associated with one of the following functions:

Table D.A ALT Key Functions

ALT Key and then...			
ALT	Esc	S.M.A.R.T.	Function not available.
	Sel	View	Allows the selection of how parameters will be viewed or detailed information about a parameter or component.
	▲	Lang	Function not available.
	▼	Auto/Man	Function not available.
	↵	Remove	Allows HIM removal without causing a fault if the HIM is not the last controlling device and does not have manual control of the drive.
	.	Exp	Allows the value to be entered as an exponent.
	+/–	Param #	Allows entry of a parameter number for viewing/editing.

Menu Structure

Figure D.1 HIM Menu Structure



Diagnostics Menu

When a fault trips the drive, use this menu to access detailed data about the drive.

Option	Description
Faults	View fault queue or fault information, clear faults or reset drive.
Status Info	View parameters that display status information about the drive.
Device Version	View the firmware version and hardware series of components.
HIM Version	View the firmware version and hardware series of the HIM.

Parameter Menu

Refer to Viewing and Editing Parameters on page D-5.

Device Select Menu

Use this menu to access parameters in connected peripheral devices.

Memory Storage Menu

Drive data can be saved to, or recalled from, the HIM or EEPROM. EEPROM is permanent non-volatile drive memory. HIM sets are files stored in permanent non-volatile HIM memory.

Option	Description
HIM Copycat Device -> HIM Device <- HIM	Save data to a HIM set, load data from a HIM set to active drive memory or delete a HIM set.
EEPROM	Save data to EEPROM, load data from EEPROM to active drive memory or name a User set.
Reset To Defaults	Restore the drive to its factory-default settings.

Start Up Menu

See Chapter 2.

Preferences Menu

The HIM and drive have features that you can customize.

Option	Description
Drive Identity	Add text to identify the drive.
Change Password	Enable/disable or modify the password.
User Dspy Lines	Select the display, parameter, scale and text for the User Display. The User Display is two lines of user-defined data that appears when the HIM is not being used for programming.
User Dspy Time	Set the wait time for the User Display or enable/disable it.
User Dspy Video	Select Reverse or Normal video for the Frequency and User Display lines.
Reset User Dspy	Return all the options for the User Display to factory default values.

The PowerFlex 700S drive is initially set to Basic Parameter View. To view all parameters, set parameter 196 [ParamAccessLvl] to option 1 “Advanced”. Parameter 196 is not affected by the Reset to Defaults function.

Viewing and Editing Parameters

LCD HIM

Step	Key(s)	Example Displays
1. In the Main Menu, press the Up Arrow or Down Arrow to scroll to "Parameter."	▲ or ▼	
2. Press Enter. "FGP File" appears on the top line and the first three files appear below it.	Enter	FGP: File Monitor Motor Control Dynamic Control
3. Press the Up Arrow or Down Arrow to scroll through the files.	▲ or ▼	
4. Press Enter to select a file. The groups in the file are displayed under it.	Enter	FGP: Group Motor Data Monitoring Drive Config
5. Repeat steps 3 and 4 to select a group and then a parameter. The parameter value screen will appear.		FGP: Parameter Motor NP Volts Motor NP FLA Motor NP Hertz
6. Press Enter to edit the parameter.	Enter	
7. Press the Up Arrow or Down Arrow to change the value. If desired, press Sel to move from digit to digit, letter to letter, or bit to bit. The digit or bit that you can change will be highlighted.	▲ or ▼ Sel	FGP: Par 2 Motor NP FLA 1.000 Amps [ALT][VIEW] -> Limits
8. Press Enter to save the value. If you want to cancel a change, press Esc.	Enter	
9. Press the Up Arrow or Down Arrow to scroll through the parameters in the group, or press Esc to return to the group list.	▲ or ▼ Esc	FGP: Par 2 Motor NP FLA 1.500 Amps [ALT][VIEW] -> Limits

Numeric Keypad Shortcut

If using a HIM with a numeric keypad, press the ALT key and the +/– key to access the parameter by typing its number.

Linking Parameters

Most parameter values are entered directly by the user. However, certain parameters can be "linked," so the value of one parameter becomes the value of another. For Example: the value of an analog input can be linked to [Accel Time 1]. Rather than entering an acceleration time directly (via HIM), the link allows the value to change by varying the analog signal. This can provide additional flexibility for advanced applications.

Each link has 2 components:

- Source parameter – sender of information.
- Destination parameter – receiver of information.

Most parameters can be a source of data for a link, except parameter values that contain an integer representing an ENUM (text choice). These are not allowed, since the integer is not actual data (it represents a value). Refer to the list of parameters in Chapter 3 for information on which parameters can be destinations. All links must be established between equal data types

(parameter value formatted in floating point can only source data to a destination parameter value that is also floating point).

Establishing A Link

Step	Key(s)	Example Displays
1. Select a valid destination parameter to be linked. The parameter value screen displays.		FGP: Parameter Accel Time 1 Decel Time 1 S Curve Time
2. Press Enter to edit the parameter. The cursor will move to the value line.	Enter	
3. Press ALT and then View (Sel). Next, press the Up or Down Arrow to change "Present Value" to "Define Link." Press Enter.	ALT + Sel ▲ or ▼ Enter	Min: 0.01000 Max: 6553.5 Dflt: 10.0 Present Value → Define Link
4. Enter the Source Parameter Number and press Enter. The linked parameter can now be viewed two different ways by repeating steps 1-4 and selecting "Present Value" or "Define Link." If an attempt is made to edit the value of a linked parameter, "Parameter is Linked!" will be displayed, indicating that the value is coming from a source parameter and can not be edited.	Enter	Parameter: #32 Accel Time 1 Link: 800 Analog In1 Data
5. To remove a link, repeat steps 1-5 and change the source parameter number to zero (0).		
6. Press Esc to return to the group list.	Esc	

Removing/Installing the HIM

The HIM can be removed or installed while the drive is powered.

Step	Key(s)	Example Displays
To remove the HIM... 1. Press ALT and then Enter (Remove). The Remove HIM configuration screen appears. 2. Press Enter to confirm that you want to remove the HIM. 3. Remove the HIM from the drive. To install HIM... 1. Insert into drive or connect cable.	ALT + Enter	Remove Op Intrfc: Press Enter to Disconnect Op Intfc? (Port 1 Control)

PowerFlex 700S 2nd Encoder Feedback Option Card

Chapter Objectives

Specifications

2nd Encoder Feedback Option Card Specifications

Consideration	Description
Input	Dual Channel Plus Marker, Isolated with differential transmitter Output (Line Drive) Incremental, Dual Channel Quadrature type
Encoder Voltage Supply	5V DC or 12V DC 320 mA per channel 5V DC requires an external power supply. 12 V DC minimum high state voltage of 7V DC, maximum low state voltage of 0.4V DC
Maximum Input Frequency	400 kHz

Table E.A Recommended Cable

Cable Type and Length		Wire Type(s)	Description
Encoder/Pulse I/O Less 30.5 m (100 ft.)	Combined:	Belden 9730 (or equivalent) (1)	0.196 mm^2 (24 AWG), individually shielded.
Encoder/Pulse I/O 30.5 m (100 ft.) to 152.4 m (500 ft.)	Signal:	Belden 9730/9728 (or equivalent) (1)	0.196 mm^2 (24 AWG), individually shielded.
	Power:	Belden 8790 (2)	0.750 mm^2 (18 AWG)
	Combined:	Belden 9892 (3)	0.330 mm^2 or 0.500 mm^2 (3)
Encoder/Pulse I/O 152.4 m (500 ft.) to 259.1 m (850 ft.)	Signal:	Belden 9730/9728 (or equivalent) (1)	0.196 mm^2 (24 AWG), individually shielded.
	Power:	Belden 8790 (2)	0.750 mm^2 (18 AWG)
	Combined:	Belden 9773/9774 (or equivalent) (4)	0.750 mm^2 (18 AWG), individually shielded pair.

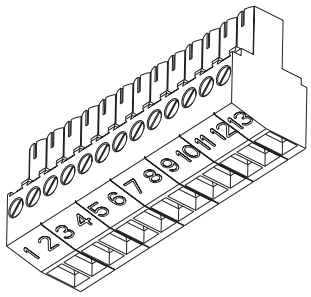
(1) Belden 9730 is 3 individually shielded pairs (2 channel plus power). If 3 channel is required, use Belden 9728 (or equivalent).

(2) Belden 8790 is 1 shielded pair.

(3) Belden 9892 is 3 individually shielded pairs (3 channel), 0.33 mm^2 (22 AWG) plus 1 shielded pair 0.5 mm^2 (20 AWG) for power.

(4) Belden 9773 is 3 individually shielded pairs (2 channel plus power). If 3 channel is required, use Belden 9774 (or equivalent).

Terminal block P1 contains connection points for a differential encoder. This terminal block resides on the Second Encoder Option Card.

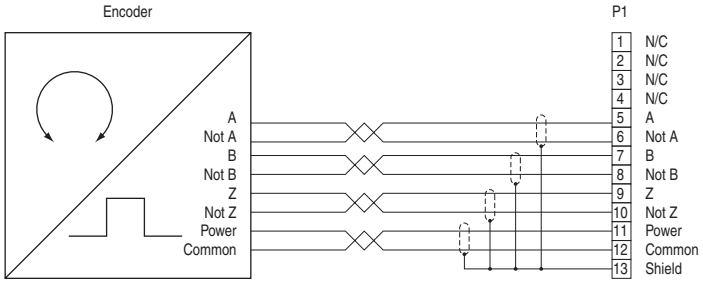


Terminal	Signal	Description
1	N/C	Not connected
2	N/C	
3	N/C	
4	N/C	
5	A	Quadrature A input
6	Not A	
7	B	Quadrature B input
8	Not B	
9	Z	Marker Pulse
10	Not Z	
11	Power	DC Power for encoder interface
12	Common	
13	Shield	Connection point for encoder cable shield

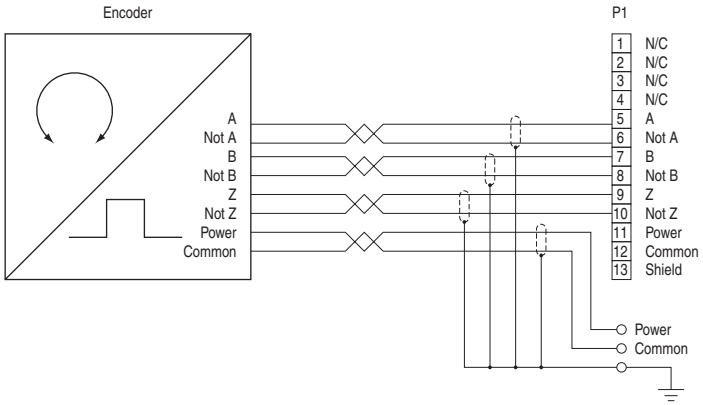
Wiring and Configuring the Second Encoder Option Card

Connection Examples

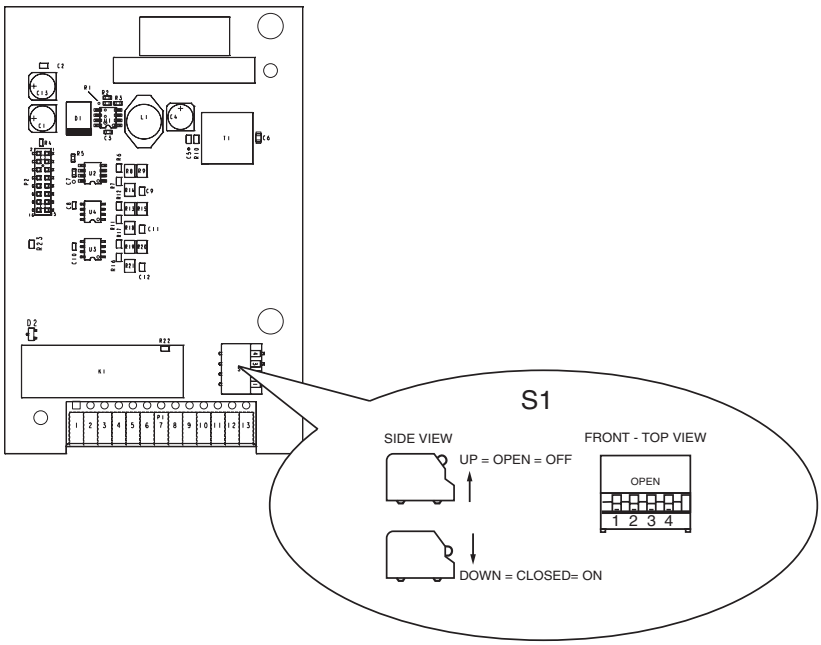
Differential Encoder with Internal Supply



Differential Encoder with External Supply



Dip Switch Settings



Voltage Selection	S1-1 (Supply)	S1-2 (A Channel)	S1-3 (B Channel)	S1-4 (Z Channel)
5V DC	Closed	Closed	Closed	Closed
12V DC	Open	Open	Open	Open

Notes

PowerFlex 700S Stegmann Hi-Resolution Encoder Feedback Option

Chapter Objectives

Specifications

Stegmann Hi-Resolution Feedback Option Card Specifications

Consideration	Description
Encoder Voltage Supply	11.5V dc @ 130 mA
Hi-Resolution Feedback	Sine/Cosine 1V P-P Offset 2.5
Maximum Cable Length	182 m (600 ft.)
Maximum Frequency (Encoder Speed)	12.5 µs/cycle (4687.5 RPM for encoders with 1024 sine cycles per revolution) (9375 RPM for encoders with 512 sine cycles per revolution)
RS-485 Interface	The Hi-Resolution Feedback Option card obtains the following information via the Hiperface RS-485 interface shortly after power-up: • Address • Command Number • Mode • Number of turns • Number of Sine/Cos cycles • Checksum
Customer-I/O plug (P1)	Allen-Bradley PN: S94262912 Weidmuller PN: BL3.50/90/12BK

Supported Encoders

Table F.A specifies which encoders are supported by the 700S Hi-Resolution Stegmann Encoder Feedback Option module.

Important: Please note that encoders must be ordered as "Single Ended". This will ensure that the RS-485 channel has the proper termination network installed at the factory.

Table F.A Supported Stegmann Encoders

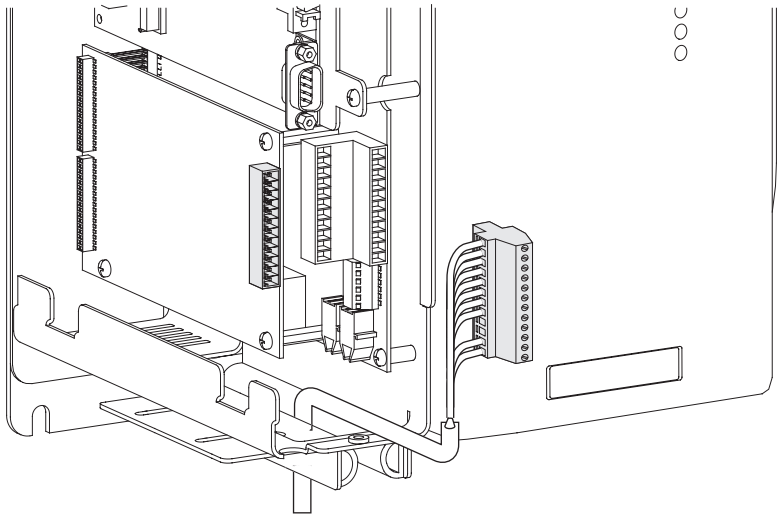
Model	Resolution	Comment
SINCOS® SCS-60, SCS-70, SCM-60, and SCM-70	512 sine cycles per revolution.	SCM-60 and SCM-70 have built-in mechanical turns counter.
SINCOS® SCS-KIT-101 and SCM-KIT-101	1024 sine cycles per revolution.	SCM-60 and SCM-70 have built-in mechanical turns counter.
SINCOS® SRS-50, SRS-60, SRM-50, and SRM-60	1024 sine cycles per revolution.	SRM-50 and SRM-60 have built-in mechanical turns counter.
SINCOS® SRS/M 25	1024 sine cycles per revolution	SRS25 and SRM25 have built-in mechanical turns counter. IP65 Protection Class. Size 25 square flange mounting.
SINCOS® SRS660	1024 sine cycles per revolution	Hollow-shaft up to 14 mm diameter
SINCOS® SHS-170	512 sine cycles per revolution.	While the software supports this encoder, the SHS-170 draws excessive current and should only be used with an external power supply.

SINCOS®, SINCODER® and LINCODER® are registered trademarks of Stegmann Inc.

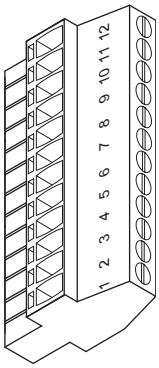
Wiring the Stegmann Hi-Resolution Feedback Option Card to an Encoder

Terminal block P1 contains connection points for a Stegmann Hiperface® encoder. This terminal block resides on the Hi-Resolution Encoder Feedback Option card.

Hiperface® is a registered trademark of Stegmann Inc.



TIP: Remember to route wires through the sliding access panel at the bottom of the Control Assembly.



Terminal	Signal	Description
12	POWER COMMON	Power supply for encoder interface.
11	POWER	
10	REFSIN	Negative Sine signal.
9	+SIN	Positive Sine signal.
8	REFCOS	Negative Cosine signal.
7	+COS	Positive Cosine signal.
6	SHIELD	Connection point for encoder cable shield.
5	SHIELD	
4	N/C	Not connected.
3	N/C	
2	DATA+ (RS 485)	Positive DH485 terminal.
1	DATA- (RS 485)	Negative DH485 terminal.

Recommended Cables

If you are using this motor and feedback device:	Use this cable:	See this wiring diagram:
Allen-Bradley 1326AB-BXXXX-21ML, and -21MKXL motors with embedded Stegmann rotary encoder	Allen-Bradley 1326-CECU-XXL-XXX	Figure 1 on page F-4
Allen-Bradley 1326AB-BXXXX-M2L, -M2KXL, -S2L, and -S2KXL motors with embedded Stegmann rotary encoder	Allen-Bradley 2090-CDNFDMP-SXX	Figure 2 on page F-4
Allen-Bradley MP-Series 460V motors with embedded Stegmann rotary encoder	Allen-Bradley 2090-CDNFDMP-SXX or 2090-XXNFMP-SXX	Figure 3 on page F-4
Allen-Bradley MP-Series 230V motors with embedded Stegmann rotary encoder	Allen-Bradley 2090-UXNFDMP-SXX or 2090-XXNFMP-SXX	Figure 3 on page F-4
Any other motor with external Stegmann SHS-170 rotary encoder	Stegmann shielded twisted-pair cable with 12-pin DIN style connector	Figure 4 on page F-5
Any other motor with external Stegmann SCS-60, SCS-70, SCM-60 or SCM-70, SRS-50, SRS-60, SRM-60, SRM-60, SRS-25 or SRM-25 rotary encoder	Stegmann shielded twisted-pair cable with 10-pin MS style connector	Figure 5 on page F-5
Any other motor with external Stegmann SCS-Kit 101 or SCK-Kit 101 rotary encoder	Stegmann shielded twisted-pair cable with 8-pin Berg style connector	Figure 6 on page F-5
Any other motor with external Stegmann SRS660 rotary encoder	Is available only with pre-attached Stegmann shielded twisted-pair cable of various lengths	Figure 7 on page F-6

Connection Examples

Figure 1 1326-CECU-XXL-XXX cable

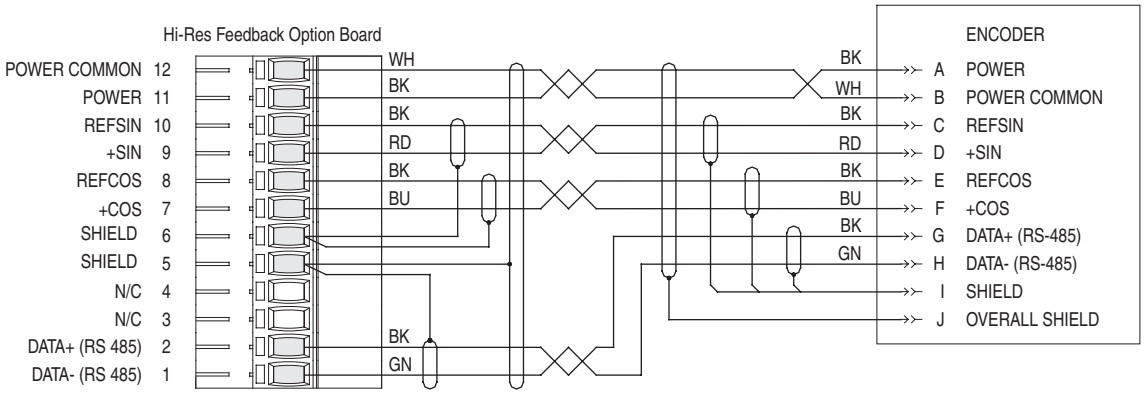


Figure 2 1326AB-BXXXX-M2L, -M2KXL, -S2L, and -S2KXL motor or 460V MP Series Motor with 2090-CDNFDMP-SXX or 2090-XXNFMP-SXX cable

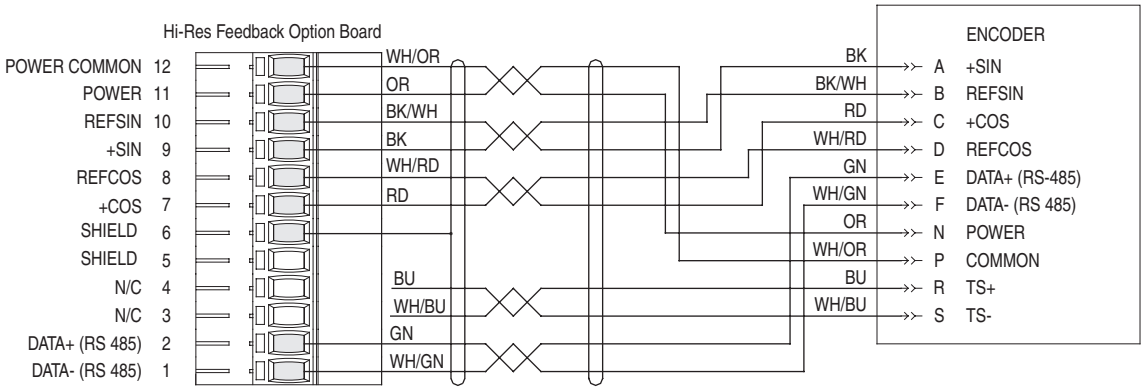
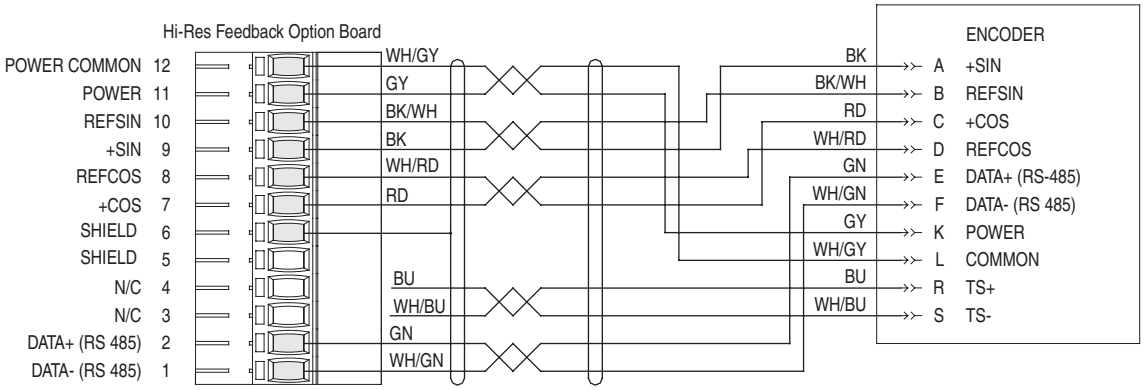


Figure 3 230V MP Series Motor with 2090-UXNFDMP-SXX or 2090-XXNFMP-SXX cable



Connection Examples

Figure 4 Stegmann shielded twisted-pair cable with 12-pin DIN style connector

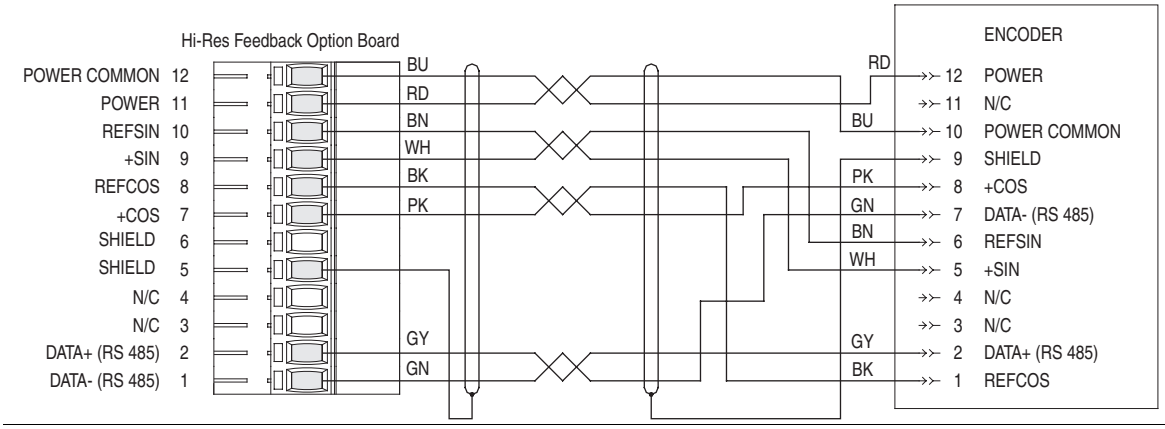


Figure 5 Stegmann shielded twisted-pair cable with 10-pin MS style connector

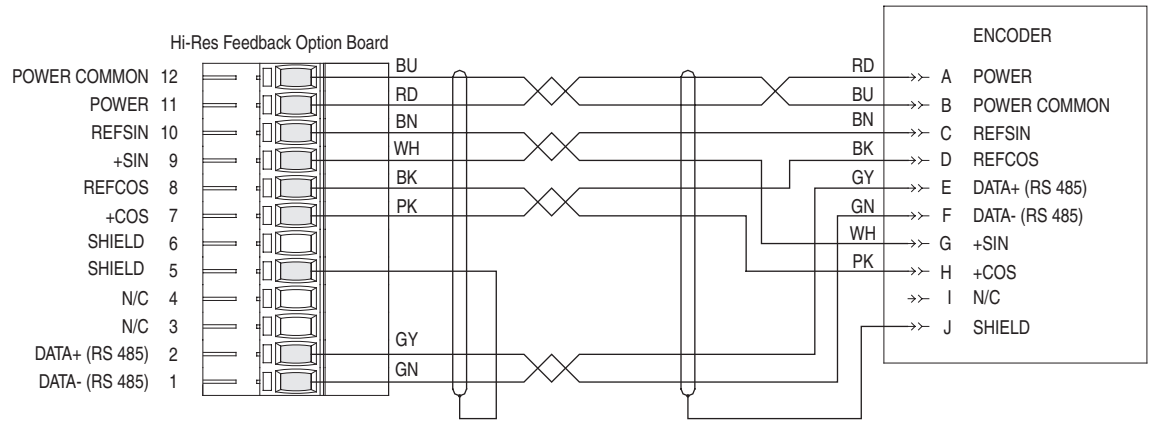
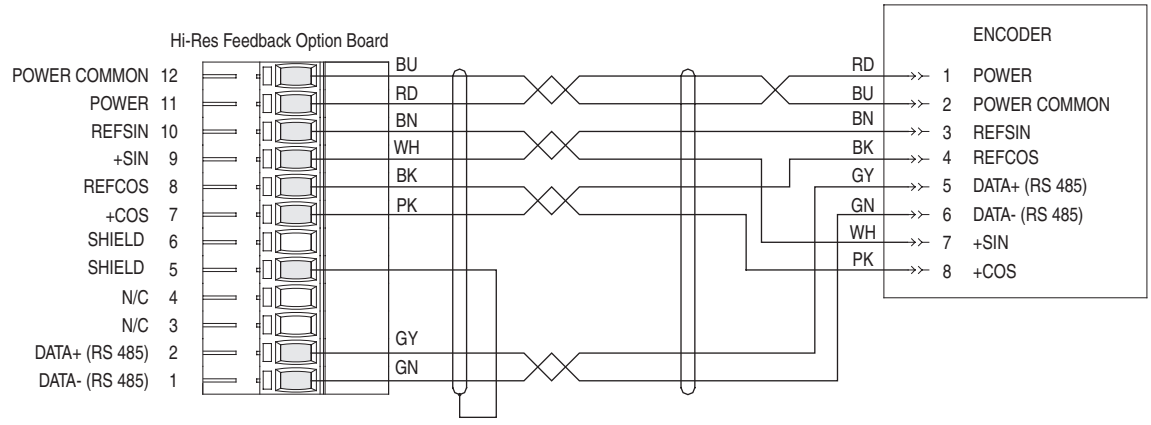
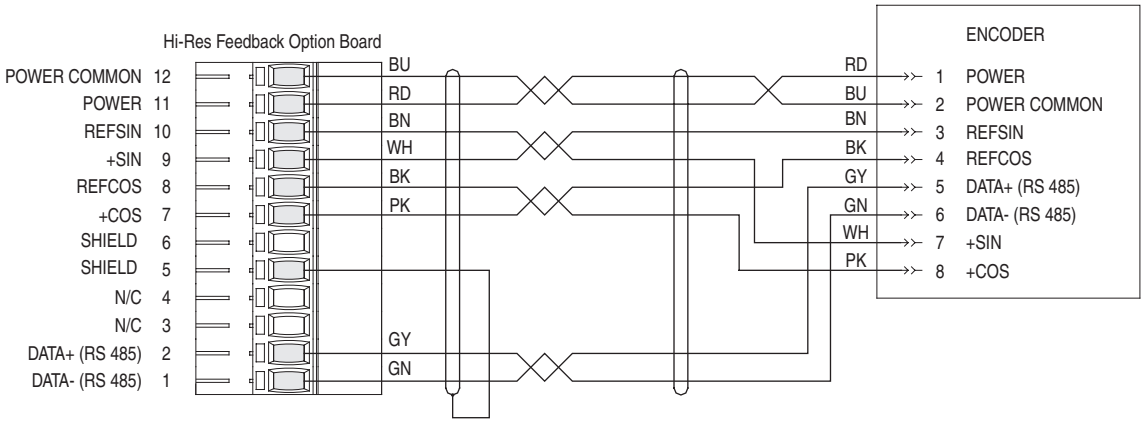


Figure 6 Stegmann shielded twisted-pair cable with 8-pin Berg style connector



Connection Examples

Figure 7 Pre-attached Stegmann shielded twisted-pair cable



PowerFlex 700S Resolver Feedback Option Card

Chapter Objectives

Specifications

Resolver Feedback Option Card Specifications

Consideration	Description
Excitation Frequency	2400 Hz
Excitation Voltage	4.25 - 26 Vrms
Resolver Feedback Voltage	2 Vrms +/- 300 mV
Customer-I/O plug (P1)	Allen-Bradley PN: S94262908 Weidmuller PN: BL3.50/90/8BK

Compatible Resolvers

Table H specifies which resolvers are supported by the PowerFlex 700S Resolver Feedback Option module.

Table H Compatible Resolvers.

Manufacturer	Manufacturer Catalog Number	Notes	Parameter 275 [Reslvr0 Type Sel] Setting for Phase I Firmware 1.17	Parameter 275 [Reslvr0 Type Sel] Setting for Phase I Firmware 2.XX	Parameter 277 [Reslvr0 Type Sel] Setting for Phase II Firmware 1.XX
Tamagawa	TS-2014N181E32	x 1, flange-mounted enclosure	1 - Rel800123-2R	1 - T2014/2087x1	1 - T2014/2087x1
Tamagawa	TS-2014N182E32	x 2, flange-mounted enclosure	2 - Rel800123-2S	2 - T2014/2087x2	2 - T2014/2087x2
Tamagawa	TS-2014N185E32	x 5, flange-mounted enclosure	3 - Rel800123-2T	3 - T2014/2087x2	3 - T2014/2087x2
Tamagawa	TS-2087N12E9	x 2, HD foot-mounted enclosure, double shaft	2 - Rel800123-2S	2 - T2014/2087x2	2 - T2014/2087x2
Tamagawa	TS-2087N1E9	x 1, HD foot-mounted enclosure	1 - Rel800123-2R	1 - T2014/2087x1	1 - T2014/2087x1
Tamagawa	TS-2087N2E9	x 2, HD foot-mounted enclosure	2 - Rel800123-2S	2 - T2014/2087x2	2 - T2014/2087x2
Tamagawa	TS-2087N5E9	x 5, HD foot-mounted enclosure	3 - Rel800123-2T	3 - T2014/2087x2	3 - T2014/2087x2
Tamagawa	TS-2087N11E9	x 1, HD foot-mounted enclosure, double shaft	1 - Rel800123-2R	1 - T2014/2087x1	1 - T2014/2087x1
Advanced Micro Controls Inc. (AMCI)	R11X-C10/7		N/A	14 - AmciR11XC107	14 - AmciR11XC107

Allen-Bradley servo motors may be ordered with factory installed resolvers. Table I specifies which factory installed resolvers are supported by the 700S Resolver Feedback Option module.

Table I Compatibility with Resolvers on Allen-Bradley Motors

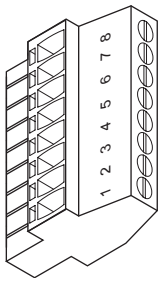
Motor / Resolver Type	Compatible	Notes	Parameter 275 [Reslvr0 Type Sel] Setting for Phase I Firmware 1.17	Parameter 275 [Reslvr0 Type Sel] Setting for Phase I Firmware 2.XX	Parameter 277 [Reslvr0 Type Sel] Setting for Phase II Firmware 1.XX
1326 AB 230V Primary Resolver	No	Receiver type resolver - not supported	Not Supported	Not Supported	Not Supported
1326 AB 460V Primary Resolver	Yes	Transmitter type resolver - supported	9 - AB 164982-8	9 - 1326Ax 460v	9 - 1326Ax 460v
1326 AB 460V Secondary Resolver	Yes	• Secondary resolver is geared to motor - not intended for motor speed / position feedback • Transmitter type resolver - supported	13 - AB 129214-8	13 - Reserved	13 - Reserved
1326AD 230V Rare Earth Primary Resolver	No	Receiver type resolver - not supported	Not Supported	Not Supported	Not Supported
1326AH 460V Explosion Proof Motor Primary Resolver	Yes	Transmitter type resolver - supported	9 - AB 164982-8	9 - 1326Ax 460v	9 - 1326Ax 460v
1326AH 460V Explosion Proof Motor Secondary Resolver	Yes	• Secondary resolver is geared to motor - not intended for motor speed / position feedback • Transmitter type resolver - supported	N/A	N/A	N/A
1326AS 460V Rare Earth Primary Resolver	Yes	Transmitter type resolver - supported	9 - AB 164982-8	9 - 1326Ax 460v	9 - 1326Ax 460v
MPL 460V Primary Resolver	Yes	Transmitter type resolver - supported	4 - AB 155407-8	4 - MPL 460v	4 - MPL 460v

Recommended Cable

Rockwell Automation strongly recommends the use of Reliance Electric 417900-207CG or Belden 9730 cable for installation, or an equivalent cable that meets these specifications:

- 3 Twisted Pairs, 80°C, 300V
- Chrome FPR Jacket, Plenum Rated
- Conductor Size: 18 AWG
- Twists Per Inch: 2-3 twists per inch of wire lay per pair
- Capacitance Per Pair: not to exceed 30 pF per foot +/- 0.3 pF as read on a GEN_RAD Model 1658 RLC Digibridge or equivalent
- Capacitance Difference Pair to Pair: not to exceed 0.6 pF per foot as read on a GEN_RAD Model 1658 RLC Digibridge or equivalent
- Resistance per 1000 Feet: 17.15Ω +/- 10%
- Inductance per 1000 Feet: 0.13 mH +/- 10% as read on a GEN_RAD Model 1658 RLC Digibridge or equivalent
- Insulation Thickness: 0.008 in.
- Conductor Stranding 16/30
- Jacket Thickness: 0.018 in.

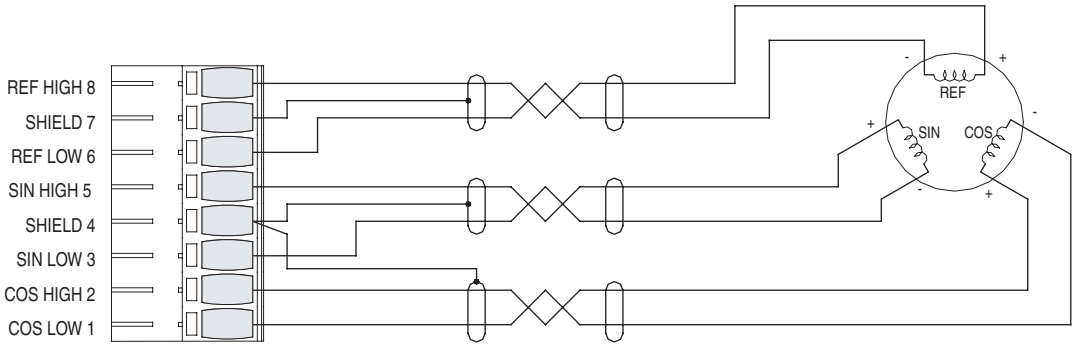
Wiring the Resolver Feedback Option Card to a Resolver



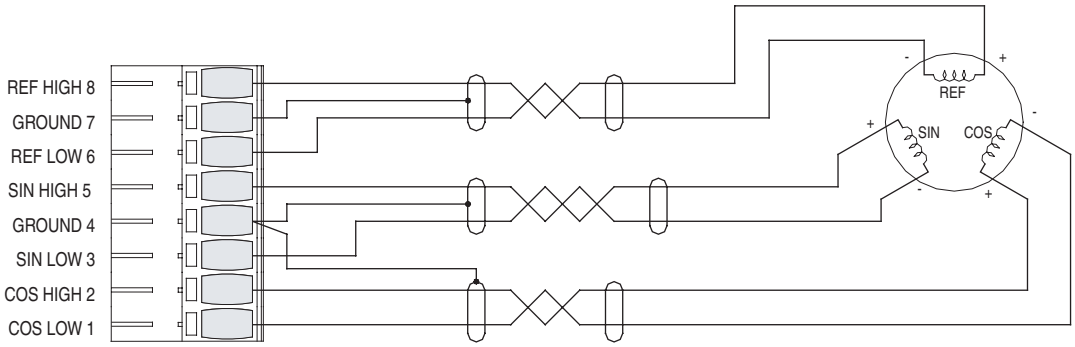
Terminal	Signal	Description
8	REF HIGH	Positive Reference signal
7	SHIELD	Connection point for resolver cable shield
6	REF LOW	Negative Reference signal
5	SIN HIGH	Positive Sine signal
4	SHIELD	Connection point for resolver cable shield
3	SIN LOW	Negative Sine signal
2	COS HIGH	Positive Cosine signal
1	COS LOW	Negative Cosine signal

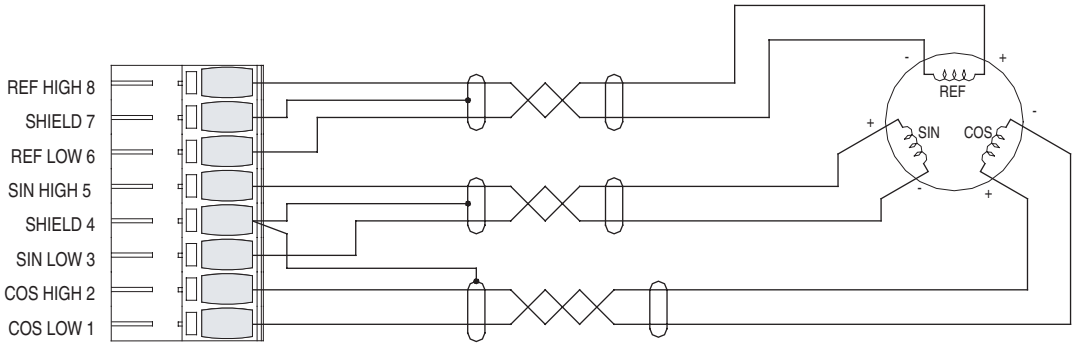
Connection Examples

Resolver Interface - Clockwise Rotation = Count Up



Resolver Interface - Clockwise Rotation = Count Down (Reverse Polarity of Sine or Cosine Signals)





Notes

PowerFlex 700S Multi-Device Interface (MDI) Option Card

Specifications

MDI Option Card Specifications

Consideration	Description
Rotary Encoder Voltage Supply	11.5V DC @ 130 mA
Rotary Encoder Hi-Resolution Feedback	Sine/Cosine 1V P-P Offset 2.5
Rotary Encoder Maximum Cable Length	90m (295 ft.)
Rotary Encoder RS-485 Interface	The MDI Option card obtains the following information via the Hiperface RS-485 interface shortly after power-up: • Address • Command Number • Mode • Number of turns • Number of Sine/Cos cycles • Checksum
Registration Inputs	high speed 12-24V DC sinking digital inputs
Customer-I/O plug (P1)	Allen-Bradley PN: S94274917 Weidmuller PN: 67601782

Supported Linear Sensors

Temposonics® III Linear sensors with MTS® part numbers ending in 1S2G1102 work with the MDI Option.

Part Number Character	Characteristic
1	Input Voltage = +24Vdc
S	SSI output
2	Data Length = 24 Bits
G	Output Format = Gray Code
1	Resolution = 0.005 mm
1	Performance = Standard
02	Scale Orientation = Forward-acting Synchronized

Supported Rotary Encoders

Table H.A specifies which encoders work with the MDI Option.

Important: Please note that encoders must be ordered as "Single Ended". This will ensure that the RS-485 channel has the proper termination network installed at the factory.

Table H.A Supported Stegmann Rotary Encoders

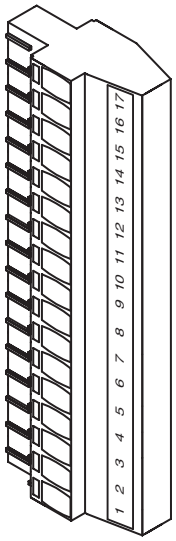
Model	Resolution	Comment
SINCOS® SCS-60, SCS-70, SCM-60, and SCM-70	512 sine cycles per revolution.	SCM-60 and SCM-70 have built-in mechanical turns counter.
SINCOS® SCS-KIT-101 and SCM-KIT-101	1024 sine cycles per revolution.	SCM-60 and SCM-70 have built-in mechanical turns counter.
SINCOS® SRS-50, SRS-60, SRM-50, and SRM-60	1024 sine cycles per revolution.	SRM-50 and SRM-60 have built-in mechanical turns counter.
SINCOS® SRS/M 25	1024 sine cycles per revolution	SRS25 and SRM25 have built-in mechanical turns counter. IP65 Protection Class. Size 25 square flange mounting.
SINCOS® SRS660	1024 sine cycles per revolution	Hollow-shaft up to 14 mm diameter
SINCOS® SHS-170	512 sine cycles per revolution.	While the software supports this encoder, the SHS-170 draws excessive current and should only be used with an external power supply.

SINCOS®, SINCODER® and LINCODER® are registered trademarks of Stegmann Inc.

Recommended Cables

If you are using this motor and feedback device:	Use this cable:	See this wiring diagram:
Temposonics III Linear sensors with MTS part numbers ending in 1S2G1102	Mating MTS molded extension cable for RG connector or integral P cable	Figure 1 on page H-3
Allen-Bradley 1326AB-BXXXX-M2L, -M2KXL, -S2L, and -S2KXL motors with embedded Stegmann rotary encoder	Allen-Bradley 2090-CDNFDMP-SXX	Figure 2 on page H-4
Allen-Bradley MP-Series 460V motors with embedded Stegmann rotary encoder	Allen-Bradley 2090-CDNFDMP-SXX or 2090-XXNFMP-SXX	Figure 2 on page H-4
Allen-Bradley MP-Series 230V motors with embedded Stegmann rotary encoder	Allen-Bradley 2090-UXNFDMP-SXX or 2090-XXNFMP-SXX	Figure 3 on page H-4
Any other motor with external Stegmann SHS-170 rotary encoder	Stegmann shielded twisted-pair cable with 12-pin DIN style connector	Figure 4 on page H-4
Any other motor with external Stegmann SCS-60, SCS-70, SCM-60 or SCM-70, SRS-50, SRS-60, SRM-60, SRM-60, SRS-25 or SRM-25 rotary encoder	Stegmann shielded twisted-pair cable with 10-pin MS style connector	Figure 5 on page H-5
Any other motor with external Stegmann SCS-Kit 101 or SCK-Kit 101 rotary encoder	Stegmann shielded twisted-pair cable with 8-pin Berg style connector	Figure 6 on page H-5
Any other motor with external Stegmann SRS660 rotary encoder	Is available only with pre-attached Stegmann shielded twisted-pair cable of various lengths	Figure 7 on page H-5

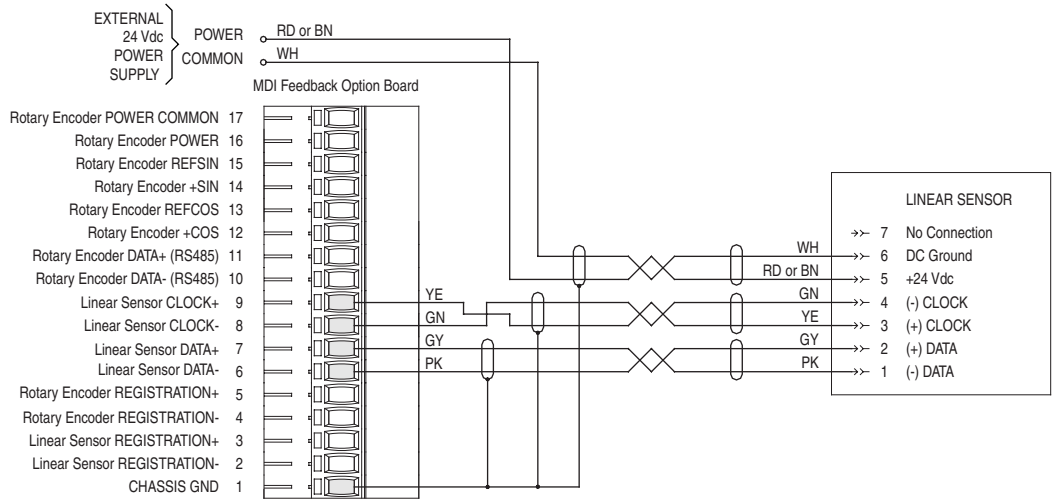
Wiring the MDI Option Card



Terminal	Signal	Description
17	Rotary Encoder POWER COMMON	Power supply for Rotary Encoder interface
16	Rotary Encoder POWER	
15	Rotary Encoder REFSIN	Positive Sine signal for Rotary Encoder interface
14	Rotary Encoder +SIN	Negative Sine signal for Rotary Encoder interface
13	Rotary Encoder REFCOS	Negative Cosine signal for Rotary Encoder interface
12	Rotary Encoder +COS	Positive Cosine signal for Rotary Encoder interface
11	Rotary Encoder DATA+ (RS485)	Positive DH485 terminal for Rotary Encoder interface
10	Rotary Encoder DATA- (RS485)	Negative DH485 terminal for Rotary Encoder interface
9	Linear Sensor CLOCK+	Positive Clock terminal for Linear Sensor interface
8	Linear Sensor CLOCK-	Negative Clock terminal for Linear Sensor interface
7	Linear Sensor DATA+	Positive SSI terminal for Linear Sensor interface
6	Linear Sensor DATA-	Negative SSI terminal for Linear Sensor interface
5	Rotary Encoder REGISTRATION+	Positive terminal for Rotary Encoder registration strobe
4	Rotary Encoder REGISTRATION-	Negative terminal for Rotary Encoder registration strobe
3	Linear Sensor REGISTRATION+	Positive terminal for Linear Sensor registration strobe
2	Linear Sensor REGISTRATION-	Negative terminal for Linear Sensor registration strobe
1	CHASSIS GND	Connection point for cable shields

Connection Examples

Figure 1 Linear Sensor Connections with MDI RG Connector or P Integral Cable



Connection Examples

Figure 2 Rotary Encoder Connections for 1326AB-BXXXX-M2L, -M2KXL, -S2L, and -S2KXL motor or 460V MP Series Motor with 2090-CDNFDMP-SXX or 2090-XXNFMP-SXX cable

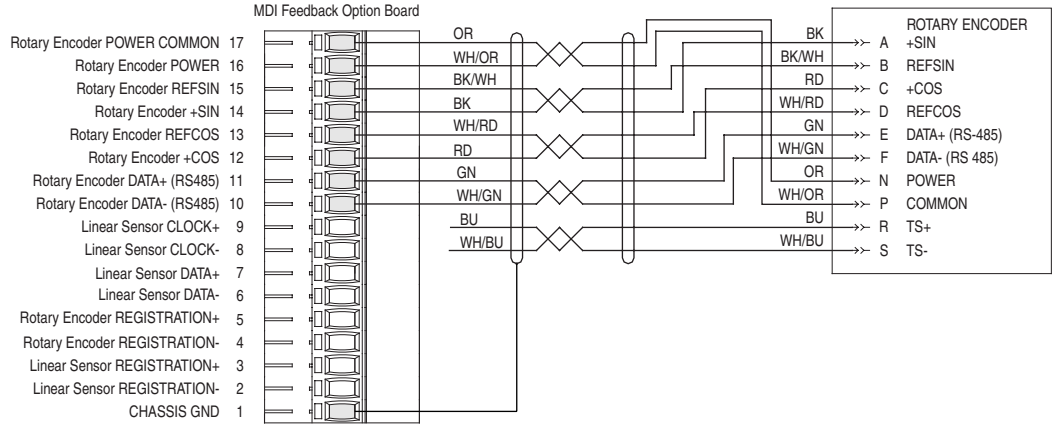


Figure 3 Rotary Encoder Connections for 230V MP Series Motor with 2090-UXNFDMP-SXX or 2090-XXNFMP-SXX cable

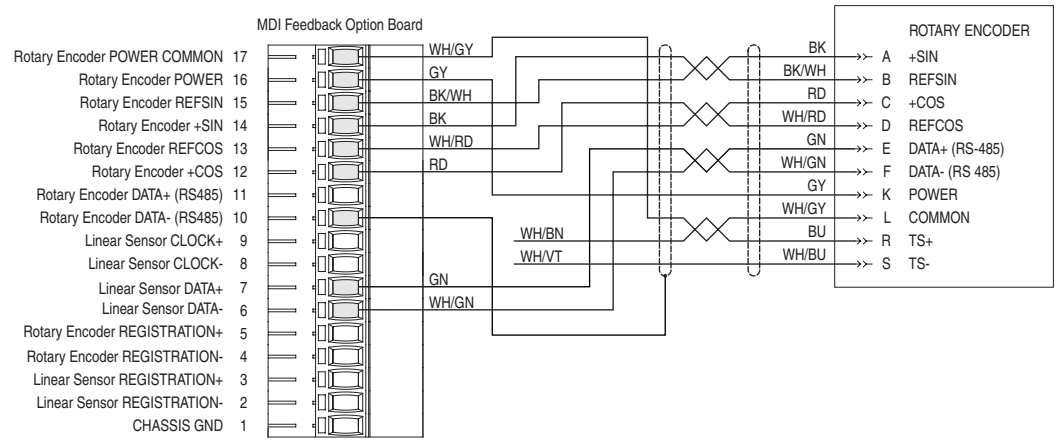
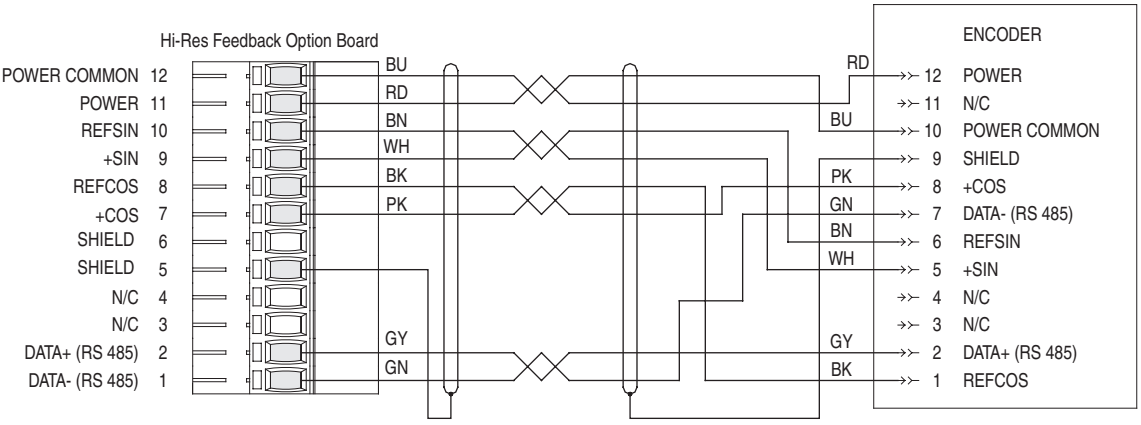


Figure 4 Stegmann shielded twisted-pair cable with 12-pin DIN style connector



Connection Examples

Figure 5 Rotary Encoder Connections with Stegmann shielded twisted-pair cable and 10-pin MS style connector

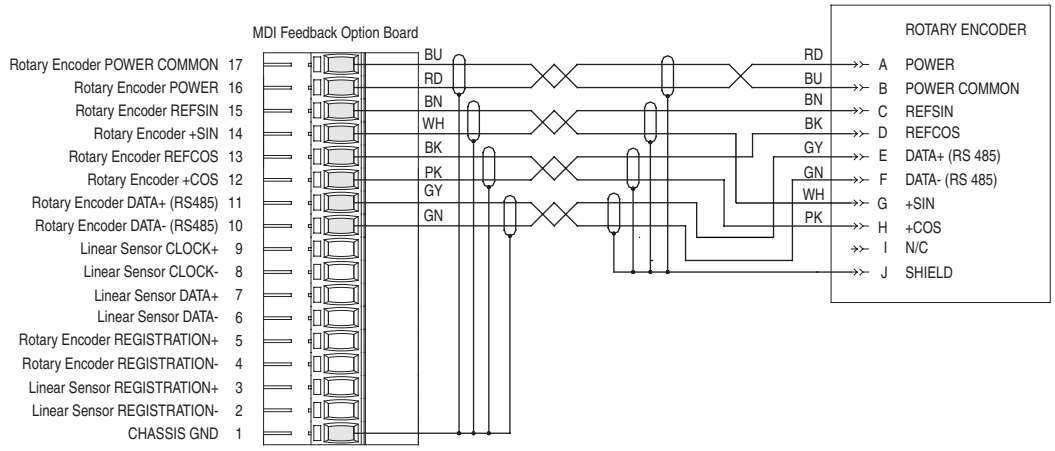


Figure 6 Rotary Encoder Connections with Stegmann shielded twisted-pair cable and 8-pin Berg style connector

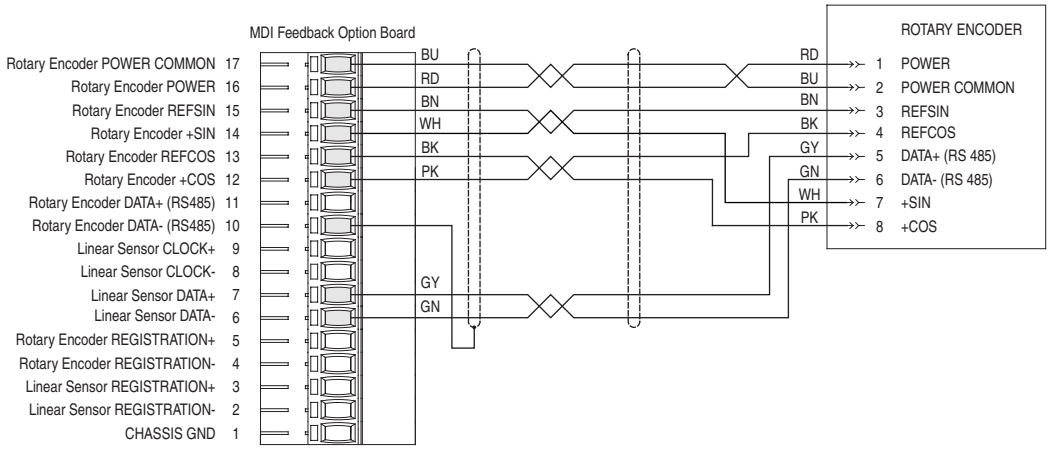
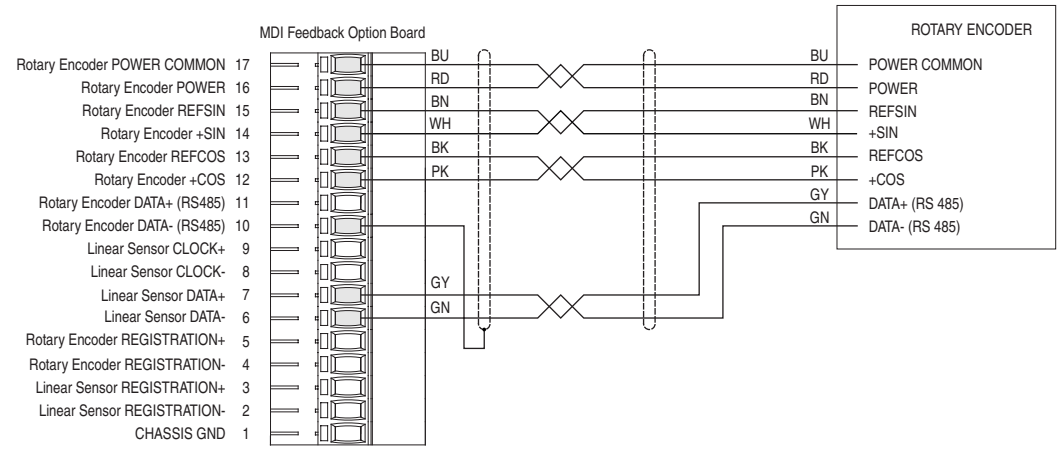
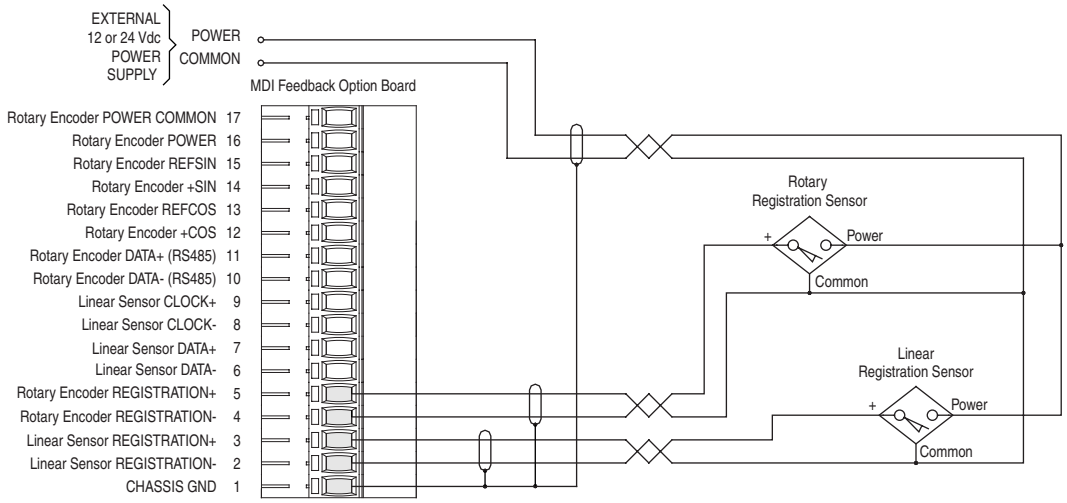


Figure 7 Rotary Encoder Connections with Stegmann pre-attached shielded twisted-pair cable



Connection Examples

Figure 8 Registration Sensor Connection



PowerFlex 700S Permanent Magnet Motor Specifications

Compatible Permanent Magnet Motors

The following table contains a list of specifications for the permanent magnet motors compatible with PowerFlex 700S drives. Note that you must have a high resolution Stegmann or compatible resolver.

Table I.A Motor Name Plate and Rating Specifications

Model Number	Motor NP Volts (line to line V rms)	Motor NP FLA (A rms)	Motor NP Frequency (Hz)	Motor NP RPM (oper. rpm)	Motor NP Power (KW)	Motor Poles	Current peak (A rms)	System Cont. Stall Torque (N-m)	Motor Max RPM (rpm)
Parameter #	1	2	3	4	5	7			
MPL-A310P	230	3.4	294.0	4410	0.73	8	9.9,	1.58	5000
MPL-A310F	230	2.1	185.3	2780	0.46	8	6.6	1.58	3000
MPL-A320P	230	6.4	271.3	4070	1.30	8	20.9	3.05	5000
MPL-A320H	230	4.6	208.7	3130	1.00	8	13.6	3.05	3500
MPL-A330P	230	8.5	280.7	4210	1.80	8	26.9	4.08	5000
MPL-A420P	230	9.0	268.7	4030	2.00	8	32.5	4.74	5000
MPL-A430P	230	11.9	234.0	3510	2.20	8	47.4	5.99	5000
MPL-A430H	230	8.6	184.7	2770	1.80	8	31.8	6.21	3500
MPL-A4520P	230	12.4	234.0	3510	2.20	8	35.4	5.99	5000
MPL-A4520K	230	10.6	223.3	3350	2.10	8	30.4	5.99	4000
MPL-A4530F	230	9.5	144.7	2170	1.90	8	29.7	8.36	2800
MPL-A4530K	230	14.4	196.0	2940	2.50	8	43.8	8.13	4000
MPL-A4540C	230	6.6	93.3	1400	1.50	8	20.5	10.20	1500
MPL-A4540F	230	13.0	162.0	2430	2.60	8	38.2	10.20	3000
MPL-A520K	230	16.3	208.0	3120	3.50	8	46.0	10.70	4000
MPL-A540K	230	29.3	180.7	2710	5.50	8	84.9	19.40	4000
MPL-A560F	230	29.3	125.3	1880	5.50	8	84.9	27.90	3000
MPL-B310P	460	1.7	310.0	4650	0.77	8	3.0	1.58	5000
MPL-B320P	460	3.2	313.3	4700	1.50	8	5.0	3.05	5000
MPL-B330P	460	4.3	274.0	4110	1.80	8	7.0	4.18	5000
MPL-B420P	460	4.5	255.3	3830	1.90	8	9.2	4.74	5000
MPL-B430P	460	6.5	214.0	3210	2.20	8	12.0	6.55	5000
MPL-B4520P	460	6.0	236.7	3550	2.10	8	17.0	5.65	5000
MPL-B4530F	460	5.0	162.0	2430	2.10	8	13.4	8.25	3000
MPL-B4530K	460	7.8	200.7	3010	2.60	8	19.1	8.25	4000
MPL-B4540F	460	6.4	162.0	2430	2.60	8	16.3	10.20	3000
MPL-B4560F	460	8.3	144.7	2170	3.20	8	25.5	14.10	3000
MPL-B520K	460	8.1	208.0	3120	3.50	8	23.3	10.70	4000
MPL-B540K	460	14.5	177.3	2660	5.40	8	42.4	19.40	4000
MPL-B560F	460	14.5	130.7	1960	5.50	8	42.4	26.80	3000
MPL-B580F	460	18.4	132.7	1990	7.10	8	66.5	34.00	3000
MPL-B580J	460	22.6	148.0	2220	7.90	8	66.5	34.00	3800
MPL-B640F	460	22.7	106.0	1590	6.11	8	46.0	36.70	3000
MPL-B660F	460	27.2	81.3	1220	6.15	8	67.9	48.00	3000
MPL-B680D	460	24.0	94.0	1410	9.30	8	66.5	62.80	2000
MPL-B680F	460	33.9	79.3	1190	7.50	8	67.9	60.00	3000
MPL-B860D	460	33.6	96.0	1440	12.50	8	67.5	83.10	2000
MPL-B880C	460	33.6	72.7	1090	12.60	8	69.0	110.00	1500
MPL-B880D	460	40.3	86.7	1300	15.00	8	113.2	110.00	2000
MPL-B960B	460	29.7	62.0	930	12.70	8	63.6	130.00	1200
MPL-B960C	460	38.9	76.0	1140	14.80	8	88.4	124.30	1500
MPL-B960D	460	50.2	76.7	1150	15.00	8	102.5	124.30	2000
MPL-B980B	460	31.8	59.3	890	15.02	8	70.7	162.70	1000
MPL-B980C	460	48.2	67.3	1010	16.80	8	99.0	158.20	1500
MPL-B980D	460	63.6	74.7	1120	18.60	8	141.4	158.20	2000

Model Number	Motor NP Volts (line to line V rms)	Motor NP FLA (A rms)	Motor NP Frequency (Hz)	Motor NP RPM (oper. rpm)	Motor NP Power (KW)	Motor Poles	Current peak (A rms)	System Cont. Stall Torque (N-m)	Motor Max RPM (rpm)
MPG-A004-031	230	1.8	222.7	3340	0.21	8	4.0	0.60	6000
MPG-A010-031	230	2.1	189.3	2840	0.36	8	6.0	1.21	4875
MPG-A010-091	230	0.9	295.3	4430	0.19	8	2.3	0.41	5900
MPG-A025-031	230	9.9	181.0	1810	0.88	12	19.8	4.65	5200
MPG-A025-091	230	3.0	168.0	1680	0.52	12	8.5	2.95	5625
MPG-A050-031	230	24.7	120.0	1200	1.50	12	53.0	11.90	2510
MPG-A050-091	230	5.0	275.0	2750	0.75	12	15.6	2.60	3775
MPG-A110-031	230	20.2	122.0	1220	2.20	12	53.0	17.20	2875
MPG-A110-091	230	17.0	184.0	1840	1.60	12	33.2	8.30	3500
MPG-B010-031	460	1.6	162.7	2440	0.34	8	4.4	1.33	6450
MPG-B010-091	460	0.7	357.3	5360	0.23	8	1.5	0.41	6450
MPG-B025-031	460	4.0	219.0	2190	0.92	12	11.3	4.02	4838
MPG-B025-091	460	1.9	175.0	1750	0.54	12	5.2	2.95	5900
MPG-B050-031	460	16.3	92.0	920	1.20	12	32.5	12.40	2510
MPG-B050-091	460	3.4	290.0	2900	0.79	12	9.9	2.60	4560
MPG-B110-031	460	12.9	112.0	1120	2.00	12	31.1	17.00	2420
MPG-B110-091	460	10.6	184.0	1840	1.60	12	20.5	8.30	3500
1326AB-B410G	460	2.5	118.0	3540	1.00	4	7.4	2.70	5000
1326AB-B410J	460	3.5	165.0	4950	1.40	4	10.4	2.70	7250
1326AB-B420E	460	2.8	70.0	2100	1.10	4	8.5	5.00	3000
1326AB-B420H	460	5.5	137.3	4120	2.20	4	15.6	5.10	6000
1326AB-B430E	460	3.9	67.7	2030	1.40	4	11.7	6.60	3000
1326AB-B430G	460	5.6	114.3	3430	2.30	4	16.8	6.40	5000
1326AB-B515E	460	6.1	70.3	2110	2.30	4	18.3	10.40	3000
1326AB-B515G	460	9.5	88.7	2660	2.90	4	28.5	10.40	5000
1326AB-B520E	460	6.7	71.0	2130	2.90	4	20.1	13.00	3000
1326AB-B520F	460	8.8	70.3	2110	2.90	4	26.4	13.10	3500
1326AB-B530E	460	9.5	74.3	2230	4.20	4	28.5	18.00	3000
1326AB-B720E	460	17.5	70.0	2100	6.80	4	52.5	30.90	3500
1326AB-B720F	460	27.5	117.0	3510	11.70	4	66.5	31.80	5000
1326AB-B730E	460	22.8	78.3	2350	9.60	4	66.5	39.00	3350
1326AB-B740C	460	20.9	52.3	1570	8.70	4	62.7	53.00	2200
1326AB-B740E	460	32.0	79.7	2390	12.70	4	66.5	50.80	3400
			0.0						
1326AS-B310H	460	0.8	204.5	4090	0.30	6	2.4	0.70	6200
1326AS-B330H	460	2.1	204.5	4090	0.90	6	6.0	2.10	6500
1326AS-B420G	460	2.6	179.0	3580	1.20	6	7.8	3.20	5250
1326AS-B440G	460	5.4	149.0	2980	2.00	6	16.2	6.40	5250
1326AS-B460F	460	6.2	148.5	2970	2.80	6	18.6	9.00	4300
1326AS-B630F	460	7.8	142.7	2140	2.40	8	18.5	10.70	4500
1326AS-B660E	460	11.8	100.7	1510	3.40	8	29.8	21.50	3000
1326AS-B690E	460	19.0	87.3	1310	5.00	8	41.3	36.40	3000
1326AS-B840E	460	21.2	79.3	1190	4.70	8	39.5	37.60	3000
1326AS-B860C	460	17.6	77.3	1160	6.00	8	44.4	49.30	2000
1326AH-B330F	460	2.1	0.0	3000	0.75		9.0		3000
1326AH-B440F	460	3.3	0.0	2500	1.22		13.8		2500
1326AH-B540F	460	11.1	0.0	2500	2.60		47.2		2500
3050R-7	390	66.0	50.0	500	30.00	12	132.0		500
11050R-7	390	218.0	50.0	500	110.00	12	436.0		500

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Publication 20D-UM006C-EN-P – September, 2005
Supersedes August 2005