Migration Guide

Allen-Bradley

1336-Series Drives to PowerFlex 750-Series Drives

Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

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.

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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.
	**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 a hazard, and recognize the consequence.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.

Labels may also be on or inside the equipment to provide specific precautions.

	**SHOCK HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.
	**BURN HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.
	**ARC FLASH HAZARD:** Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

This table contains the changes made to this revision.

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Updated the PowerFlex 750-Series Drives Catalog Numbers explanation.	34
Updated the PowerFlex 755 Drive Fuse and Circuit Breaker Ratings tables.	49
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Added 1336 FORCE Drive 575V AC Input/Output Current Ratings table	30
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Overview

The purpose of this migration guide is to assist you in migrating a 1336-Series drive to a PowerFlex 750-Series drive. This publication contains these chapters:

- Chapter 1: Drive Selection Considerations beginning on page 11
  Compares the specifications, features, dimensions, and power and control terminals of the 1336-Series drives to the PowerFlex 750-Series drives.
- Chapter 2: Analog Speed Follower and Preset Speed beginning on page 135
  Compares the drive configuration, control wiring, and parameters of the 1336-Series drives analog speed follower to the PowerFlex 753 drives (with main control board I/O) and the PowerFlex 755 drives (with optional I/O module).
- Chapter 3: Network Communications beginning on page 183
  Identifies the 1336-Series drives 20-COMM network options that can be migrated to the PowerFlex 750-Series drives, as well as the dedicated communications in the PowerFlex 750-Series drives. Also provides overview information for velocity reference/feedback, using I/O adaptors, and 16 bit-based processors (PLC5).

General Precautions

Listed here are general precautions to be aware of when working with the drives. See the installation instructions for each drive, listed in Additional Resources on page 10, for additional precautions specific to each drive.

Qualified Personnel

ATTENTION: Only qualified personnel familiar with adjustable frequency AC drives 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.

Class 1 LED Product (750-Series drives)

ATTENTION: Hazard of permanent eye damage exists when using optical transmission equipment. This product emits intense light and invisible radiation. Do not look into fiber-optic ports or fiber-optic cable connectors. Remove power from the drive before disconnecting fiber-optic cables.

Pre-migration

Best Practices

- Upload and save the drive parameters via DriveExplorer™ or DriveExecutive™. If you cannot connect to the drive online, manually record the drive parameter values. You can also use the search mode of the human interface module (HIM) to find non-default parameters (not available on Series A HIMs below version 3.0).
- Record the motor nameplate data, and record and label all power, motor, and digital and analog I/O control wiring.
- Upload and save any network files and programmable logic controller (PLC) programs.

General Information

Refer to the Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives Installation Instructions, publication DRIVES-IN001, for information regarding the topics listed below.

Wire/Cable Type

- General
- Input power
- Output motor
- Discrete drive I/O
- Analog signal and encoder
- Communications

Power Distribution

- System configurations
- AC line voltage
- AC line impedance
- Surge protection MOVs and common mode capacitors
- PowerFlex drives with regenerative units
- DC bus wiring guidelines

Grounding

- Safety grounds
- Noise related grounds
- Practices
- Mounting
- Conduit entry
- Ground connections
- Wire routing
- Conduit
- Cable trays
- Shield termination
- Conductor termination
- Moisture

Reflective Wave

- Description
- Effects on wire types
- Length restrictions for motor protection

Electromagnetic Interference

- Causes and containing common mode noise
- Causes and preventing/ mitigating transient interference
- Enclosure lighting
- Bearing current

Motor Cable Length Tables

- 1336 PLUS II
- 1336 IMPACT
- PowerFlex 753
- PowerFlex 755

Additional Resources

These documents contain additional information concerning related Rockwell Automation products.

Resource	Description
Bulletin 1336 drives product literature	
Bulletin 1336 Adjustable Frequency AC Drive User Manual, publication 1336-UM001	Provides information on how to install, operate, start, and troubleshoot 1336-Series adjustable frequency AC drives.
1336 Adjustable Frequency AC Drive Programming Manual, publication 1336-PM000	Provides information on how to program 1336-Series adjustable frequency AC drives.
1336 PLUS Adjustable Frequency AC Drive with Sensorless Vector User Manual, publication 1336S-UM001	Provides planning, installation, wiring, and diagnostic information for the 1336 PLUS drives.
1336 PLUS II Adjustable Frequency AC Drive with Sensorless Vector User Manual, publication 1336F-UM002	Provides planning, installation, wiring, and diagnostic information for the 1336 PLUS II drives.
1336 FORCE Field Oriented Control User Manual (Series A), publication 1336T-UM000	Provides information on how to install, program, start, and maintain the 1336 FORCE digital AC drives (Series A).
1336 FORCE Adjustable Frequency AC Drive (Series B), publication 1336T-UM006	Provides information on how to install, program, start, and maintain the 1336 FORCE digital AC drives (Series B).
1336 IMPACT Adjustable Frequency AC Drive User Manual, publication 1336E-UM001	Provides information on how to install, program, start, and maintain the 1336 IMPACT AC drives.
PowerFlex 750-Series drives product literature	
PowerFlex 750-Series AC Drives Technical Data, publication 750-TD001	Provides technical data regarding the PowerFlex 750-Series adjustable frequency AC drives for a variety of industrial applications.
PowerFlex 750-Series AC Drives Installation Instructions, publication 750-IN001	Provides information on how to install, start up, and troubleshoot PowerFlex 750-Series adjustable frequency AC drives.
PowerFlex 750-Series AC Drives Programming Manual, publication 750-PM001	Provides information on how to program the PowerFlex 750-Series adjustable frequency AC drives.
General wiring and grounding guidelines	
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing an Allen-Bradley industrial automation system.
Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives Installation Instructions, publication DRIVES-IN001	Provides information on how to properly wire and ground Pulse Width Modulated (PWM) AC drives.

You can view or download publications at http://www.rockwellautomation.com/literature/. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

Drive Selection Considerations

The 1336 CLASSIC, 1336 PLUS, and 1336 PLUS II drives are part of the general-performance line of drives. For similar performance requirements we recommend you migrate to the PowerFlex 753 drive, our general-performance PowerFlex 750-Series offering.

The 1336 FORCE and 1336 IMPACT drives are part of the high-performance line of drives. For similar performance requirements we recommend you migrate to the PowerFlex 755 drive, our high-performance PowerFlex 750-Series offering.

Available Slots

The PowerFlex 750-Series drives are designed with a slot-based architecture allowing customization with available option cards. The PowerFlex 753 drive is equipped with three slots, and the PowerFlex 755 drive has five slots.

Factory Installed Options

Optional accessories for the PowerFlex 750-Series drives are not installed at the factory. All optional accessories are installed by your qualified service personnel.

Hardware Drive Enable

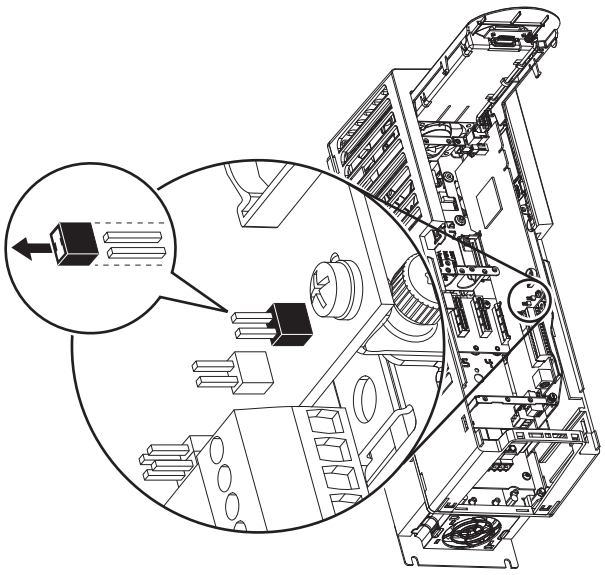
The 1336-Series drives (CLASSIC, PLUS, PLUS II, FORCE, and IMPACT) have a non-programmable input located at terminal 30 that is dedicated to the hardware enable of the drive. This input must be present before the drive will start. Opening this input shuts the drive output off, ignoring the programmed stop mode, resulting in a 'coast to stop'.

Digital Input (DI) 0 on the PowerFlex 750-Series drives can be programmed for any available digital input functions, including DI Enable. A hardware enable jumper on the main control board can be removed to force DI 0 to act as hardware enabled with no software interpretation.

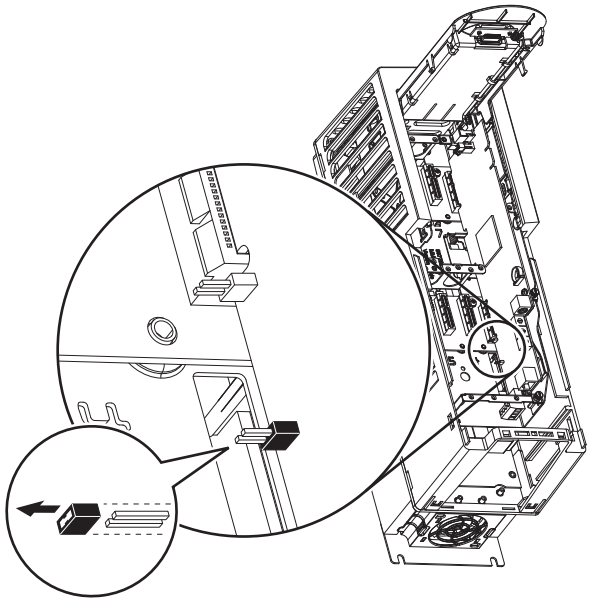
The following figure shows the hardware enable jumper locations.

Figure 1 - Hardware Enable Jumper Locations on PowerFlex 750-Series Drives

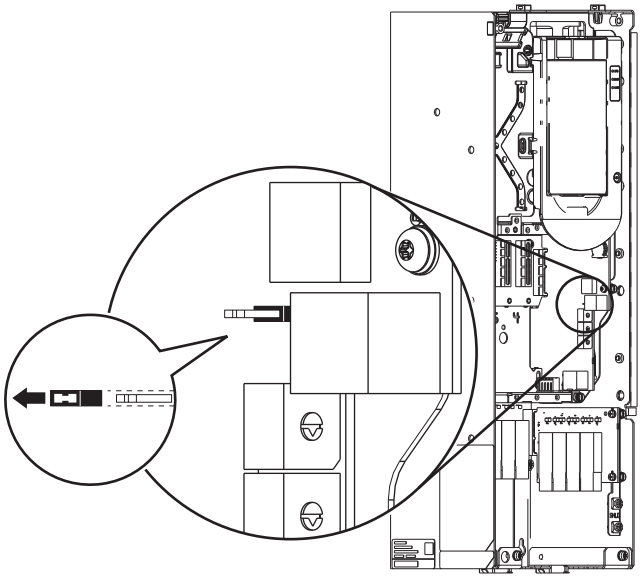
PowerFlex 753 Drives (all Frames)



PowerFlex 755 Drives (Frames 1…7)



PowerFlex 755 Drives (Frames 8 and 9)



Specifications and Features

This section compares the specifications and features of your existing 1336 PLUS II, IMPACT, and FORCE drives to the PowerFlex 753 and PowerFlex 755 drives.

Table 1 - 1336-Series Drives to PowerFlex 750-Series Drive Comparisons

	1336-Series Drives			750-Series Drives	
	1336 PLUS II	**1336 IMPACT**	**1336 FORCE**	**753**	**755**
Input Power					
Ratings					
200…240V	0.37…75 kW (0.5…100 Hp)	0.37…75 kW (0.5…100 Hp)	0.37…75 kW (0.5…100 Hp)	N/A	N/A
400…480V	0.37…448 kW (0.5…600 Hp)	0.37…597 kW (0.5…800 Hp)	0.37…597 kW (0.5…800 Hp)	0.75…250 kW (1…350 Hp)	.75…932 kW (1…1250 Hp)
500…600V	0.75…448 kW (1…600 Hp)	0.75…597 kW (1…800 Hp)	0.75…597 kW (1…800 Hp)	0.75…250 kW (1…350 Hp)	.75…750 kW (1…1000 Hp)
Single phase	Yes, 50% derate	N/A	N/A	Yes, up to 50% derate(3)	Yes, up to 50% derate(3)
Input inductor	DC Bus (Frame B and up)	DC Bus (Frame B and up)	DC Bus (Frame B and up)	DC Bus	DC Bus
Logic ride-through	0.5 seconds minimum, 2 seconds typical	2 seconds	2 seconds	0.5 seconds minimum, 2 seconds typical	0.5 seconds minimum, 2 seconds typical
Power ride-through	15 milliseconds	15 milliseconds	2 seconds	15 milliseconds	15 milliseconds
Transient protection	MOV (up to 6000 volts peak per IEEE)	up to 6000 volts peak per IEEE	MOV (up to 6000 volts peak per IEEE)	MOV (up to 6000 volts peak per IEEE)	MOV (up to 6000 volts peak per IEEE)
DC input terminals	DC+, DC-	DC+, DC-	DC+, DC-	Frames 2…4 standard, Frames 5…7 optional	Frames 2…4 standard, Frames 5…9 optional
Output Power					
Carrier frequency	2…12 kHz	2…12 kHz	1…12 kHz	Frames 1…5: 2, 4, 8, and 12 kHz Frames 6 and 7: 2, 4, and 8 kHz	Frames 1…5: 2, 4, 8, and 12 kHz Frames 6 and 7: 2, 4 and 8 kHz Frame 8 and 9: 2 and 4 kHz
Output frequency range	0…400 Hz	0…250 Hz	0…250 Hz	0…650 Hz	0…650 Hz
Efficiency	97.5% at rated amps, Nominal line volts	97% typical	97.5% at rated amps, Nominal line volts	97.5% typical	97.5% typical
Power factor	0.80 standard, 0.95 with optional inductor (A1…A3 frame drives); 0.95 standard (A4 and up)	N/A	N/A	0.98	0.98
Overload capability:					
Light duty	N/A	N/A	N/A	N/A	110% for 60 s, 120% for 3 s (4)
Normal duty(1)				110% for 60 s, 150% for 3 s	110% for 60 s, 150% for 3 s
Heavy duty(2)	150% for 60 s	150% for 60 s	150% for 60 s	150% for 60 s, 180% for 3 s	150% for 60 s, 180% for 3 s

(1) Variable torque equivalent for 1336 drives.
(2) Constant torque equivalent for 1336 drives.
(3) Three-phase input provides full rating for all drives. Single-phase operation provides up to 50% (40% for Frame 8) of rated current at 25 °C (77 °F) surrounding temperature.
(4) Frame 8 and 9 only.

Table 1 - 1336-Series Drives to PowerFlex 750-Series Drive Comparisons (continued)

	1336-Series Drives			750-Series Drives	
	1336 PLUS II	**1336 IMPACT**	**1336 FORCE**	**753**	**755**
Environmental Ratings					
Enclosure types and ambient temperature range					
IP20, NEMA/UL Type Open	N/A	N/A	N/A	0…50 °C (32…122 °F) (2)	0…50 °C (32…122 °F) (2)
IP00, NEMA/UL Type Open	0…50 °C (32…122 °F)	0…50 °C (32…122 °F)	0…50 °C (32…122 °F)	0…50 °C (32…122 °F) (3)	0…50 °C (32…122 °F) (3)
IP20, NEMA/UL Type 1 (w/hood)	N/A	N/A	N/A	0…40 °C (32…104 °F) (2)	0…40 °C (32…104 °F) (2)
IP20, NEMA/UL Type 1 (w/label)	N/A	N/A	N/A	0…40 °C (32…104 °F) (3)	0…40 °C (32…104 °F) (3)
IP20, NEMA/UL Type 1 (MCC cabinet)	N/A	N/A	N/A	N/A	0…40 °C (32…104 °F) (5)
IP30, NEMA/UL Type 1	0…40 °C (32…104 °F)	0…40 °C (32…104 °F)	0…40 °C (32…104 °F)	N/A	N/A
Flange(1) enclosure types and ambient temperature range					
Front IP20, NEMA/UL, Type Open IP00, NEMA/UL, Type Open	0…50 °C (32…122 °F)	0…50 °C (32…122 °F)	0…50 °C (32…122 °F)	0…50 °C (32…122 °F) (2) 0…40 °C (32…104 °F) (3)	0…50 °C (32…122 °F) (2) 0…40 °C (32…104 °F) (3)
Back/heatsink IP20, NEMA/UL, Type Open IP56, NEMA/UL, Type 4X IP66, NEMA/UL, Type 4X	0…50 °C (32…122 °F)	0…50 °C (32…122 °F)	0…50 °C (32…122 °F)	0…40 °C (32…104 °F) (4)	0…40 °C (32…104 °F) (4)
Stand-alone/wall mount IP54, NEMA/UL Type 12	N/A	N/A	N/A	0…40 °C (32…104 °F) (4)	0…40 °C (32…104 °F) (4)
Storage temperature range	-40…70 °C (-40…158 °F)	-40…70 °C (-40…158 °F)	-40…70 °C (-40…158 °F)	-40…70 °C (-40…158 °F)	-40…70 °C (-40…158 °F)
Standards and Certifications					
UL	Yes	Yes	Yes	Yes	Yes
CE	Yes	Yes	Yes	Yes	Yes
CSA	cUL	cUL	cUL	Yes	Yes
C-Tick	Yes	Yes	Yes	Yes	Yes
ATEX	N/A	N/A	N/A	N/A	N/A
RINA	N/A	N/A	N/A	N/A	N/A
TUV-FS	N/A	N/A	N/A	Yes	Yes
RoHS	N/A	N/A	N/A	Yes	Yes

(1) Separated cooling channel is not available for Frame 8.
(2) Frames 2…5 only.
(3) Frames 6 and 7 only.
(4) Frames 2…7 only.
(5) Frame 8 and 9 only.

Table 1 - 1336-Series Drives to PowerFlex 750-Series Drive Comparisons (continued)

	1336-Series Drives			750-Series Drives	
	1336 PLUS II	**1336 IMPACT**	**1336 FORCE**	**753**	**755**
Protection					
Motor overload	Standard	Standard	Standard	Standard	Standard
Output short circuit	Standard	Standard	Standard	Standard	Standard
Output ground fault	Standard	Standard	Standard	Standard	Standard
Under and over voltage	Standard	Standard	Standard	Standard	Standard
Dynamic braking	External (optional)	External (optional)	External (optional)	Internal chopper (3)	Internal chopper (3)
Common mode choke	External (optional)	External (optional)	External (optional)	External (optional)	External (optional)
Common mode capacitors	N/A	N/A	N/A	Standard	Standard
Safety input:					
Torque-off card	N/A	N/A	N/A	Optional	Optional
Speed monitor	N/A	N/A	N/A	Optional	Optional
Hardware enable	Standard	Standard	Standard	Standard	Standard
EMC filters (internal)	External	External	External	Standard	Standard
Drive Control Performance					
Motor control type:					
Induction V/Hz	Standard	N/A	N/A	Standard	Standard
Induction sensorless vector (SVC)	Standard	N/A	N/A	Standard	Standard
Induction flux vector (FVC)	N/A	Standard	Standard	Standard with FORCE technology	Standard with FORCE technology
Synchronous reluctance V/Hz	N/A	N/A	N/A	Standard	Standard
Synchronous reluctance SV	N/A	N/A	N/A	Standard	Standard
Adjustable voltage mode	N/A	N/A	N/A	N/A	Standard
Operating speed range	120:1	1000:1 (1) 120:1 (2)	1000:1 (1) 120:1 (2)	1000:1 (1) 120:1 (2)	1000:1 (1) 120:1 (2)
Speed control regulation (% of base speed across operating speed range)	0.1% (1); 0.5% with slip compensation	0.001% across 100:1 to 0.02% across 1000:1 (1) ±0.5% across 120:1 (2)	0.001% across 100:1 (1) 1% across 40:1 (2)	0.001% across 100:1 (1) 0.1% across 120:1 (2)	0.001% across 100:1 (1) 0.1% across 120:1 (2)
Speed control bandwidth (radians per second)	12 radians dynamic response	100 (1) 30 (2)	100 (1) 30 (2)	190 (1) 50 (2)	190 (1) 50 (2)
Slip compensation	Standard	Standard	Standard	Standard	Standard
Droop	Standard	Standard	Standard	Standard	Standard
Inertia adaption	N/A	Standard	Standard	N/A	Standard
Phase lock loop	N/A	Standard	Standard	N/A	Standard
Torque regulation	N/A	with encoder: ±2% of rated motor torque without encoder: ±5% of rated motor torque	±5% of rated motor torque	± 2%, 2500 rad/sec (1) ± 5%, 600 rad/sec (2)	± 2%, 2500 rad/sec (1) ± 5%, 600 rad/sec (2)

(1) With encoder.

(2) Without encoder.

(3) Standard on Frames 2…5 and optional on Frames 6…7.

Table 1 - 1336-Series Drives to PowerFlex 750-Series Drive Comparisons (continued)

	1336-Series Drives			750-Series Drives		
	1336 PLUS II	**1336 IMPACT**	**1336 FORCE**	**753**	**755**	**Parameter Numbers**
Drive Features						
Flying start	Standard	Standard	Standard	Standard (2)	Standard (2)	356
Bus regulator	Standard	Standard	Standard	Standard (3)	Standard (3)	372
S-curve	Standard	Standard	N/A	Standard	Standard	540/541
Drive overload protection	Standard	Standard	Standard	Standard (3)	Standard (3)	420
Advanced diagnostics	N/A	Standard	N/A	Standard	Standard	N/A
Input phase loss	Standard	Standard	Standard	Standard	Standard	462/463
User sets	N/A	N/A	N/A	N/A	N/A	N/A
Preset speeds	7	7	5	7	7	571…577
Process control loop	PID control	PID control	PID control	Standard (3)	Standard (3)	1065…1093
Fast flux up	Optional	Standard	Standard	Standard	Standard	43/44
Fast brake to stop	N/A	N/A	N/A	Standard	Standard	370
Flux braking	N/A	Standard	N/A	Standard	Standard	388
Feedback loss switchover	N/A	N/A	N/A	Standard	Standard	635/7
Real-time clock	N/A	N/A	Standard	Standard (4)	Standard (4)	N/A
Battery/auxiliary power back-up (1)	N/A	N/A	Standard	Optional	Optional	N/A
Multi-motor parameters	N/A	N/A	N/A	N/A	N/A	N/A
Start on power-up	Standard	Standard	Standard	Standard	Standard	345
Integral position loop	N/A	Standard	N/A	Standard	Standard	835…847
PCAM planner	N/A	N/A	N/A	N/A	Standard	1390…1474
Electronic gearing	N/A	N/A	N/A	Standard	Standard	815…817
Speed/position profiler	Standard	Standard	N/A	N/A	Standard	1216…1389
Position indexer	N/A	N/A	N/A	N/A	N/A	N/A
Predictive diagnostics	N/A	N/A	N/A	Standard	Standard	469…519
Torque proving	N/A	Standard	N/A	N/A	Standard	1100…1114
Conformal coating	Optional	Optional	N/A	Standard	Standard	N/A
Timer/counter functions	N/A	Standard	Standard	Standard (5)	Standard (5)	Port 14 parameters
Embedded control	N/A	Logic function blocks	Logic function blocks	Standard (5)	Standard (5)	Port 14 parameters

(1) Battery preserves the real-time clock setting when power to the drive is lost or cycled, and provides absolute time stamping in fault queues.
(2) Advanced and non-advanced.
(3) Advanced.
(4) Clock time is lost on power cycle without a battery.
(5) DeviceLogix.

Table 1 - 1336-Series Drives to PowerFlex 750-Series Drive Comparisons (continued)

	1336-Series Drives			750-Series Drives	
	1336 PLUS II	**1336 IMPACT**	**1336 FORCE**	**753**	**755**
Supported Feedback Devices					
Incremental encoder feedback	N/A	Standard	Standard	Optional	Optional
Pulse train input	N/A	N/A	N/A	Optional	Optional
Stegmann high-resolution	N/A	N/A	N/A	N/A	Optional
Heidenhain	N/A	N/A	N/A	N/A	Optional
SSI and BSSI linear	N/A	N/A	N/A	N/A	Optional
Resolver	N/A	N/A	N/A	N/A	N/A
User Interface					
HIM/operator interface	Yes	Yes	Yes	Optional (2)	Optional (2)
Languages available (number)	7	2 standard, expansion with language module	2 standard, expansion with language module	9 (3)	9 (2)
Remote display	Yes (two)	Yes (two)	Yes (two)	Optional (two) (2)	Optional (two) (2)
HIM handheld terminal	Yes (two)	Yes (two)	Yes (two)	Optional (two) (2)	Optional (two) (2)
Software configuration tools (1)	Yes	Yes	Yes	Yes	Yes
Setup tools or wizards	Yes	Yes	Yes	Yes	Yes
Communication Options					
CANopen	N/A	N/A	N/A	Optional (4)	Optional (1)
ControlNet	Standard	Standard	Standard	Optional	Optional
DF1	N/A	N/A	N/A	Optional (5)	Optional (2)
Data Highway Plus	N/A	N/A	PLC Adapter	Optional (2)	Optional (2)
DeviceNet	Standard	Standard	Standard	Optional	Optional
EtherNet/IP	N/A	N/A	N/A	Optional	Standard
Interbus	N/A	N/A	N/A	Optional (2)	Optional (2)
Modbus TCP/IP	N/A	N/A	N/A	Optional	Optional
PROFIBUS DP	N/A	N/A	N/A	Optional	Optional
Remote I/O	Standard	Standard	Standard	Optional	Optional
USB	N/A	N/A	N/A	Optional	Optional

(1) Tools available are RSLogix 5000 (version 16 or later), DriveExplorer, and DriveExecutive.
(2) A6 family only.
(3) With A6 HIM.
(4) Limited parameter accessibility.
(5) 20-HIM-A6 family only.

Drive Catalog Number Explanations

1336 CLASSIC Drives Catalog Numbers

The following tables are an explanation of the catalog numbering system for 1336 CLASSIC adjustable frequency AC drives and options. The catalog number is coded to identify the drive power rating and can be found on the drive nameplate.

1336	B015	EAE	FA2	L2	S1
Bulletin number	Drive rating	Enclosure type	Options	Options	Options

Table 2 - B003…B200 Output Current and kVA

Rating Code	Amp Out	kVA Out 380V AC	kVA Out 415V AC	kVA Out 460V AC
B003	6.0	3.9	4.3	4.8
B005	9.6	6.3	6.9	7.6
B007	13.0	8.6	9.3	10.4
B010	17.0	11.2	12.2	13.5
B015	25.0	16.5	18.0	20.0
B020	33.0	22.0	24.0	26.0
B025	41.0	27.0	29.0	33.0
B030	48.0	32.0	35.0	38.0
B040	60.0	39.0	43.0	48.0
B050	75.0	49.0	54.0	60.0
B075	120.0	79.0	86.0	96.0
B100	150.0	99.0	108.0	120.0
B125	180.0	118.0	129.0	143.0
B150	218.0	143.0	157.0	174.0
B200	290.0	191.0	208.0	231.0

Table 3 - C003…C200 Output Current and kVA

Rating Code	Amp Out	kVA Out 500V AC	kVA Out 575V AC	kVA Out 600V AC
C003	4.3	3.7	4.3	4.3
C005	6.7	5.8	6.7	6.7
C007	9.9	8.6	9.9	9.9
C010	12.1	10.5	12.1	12.1
C015	19.1	16.5	18.9	18.9
C020	24.0	20.8	23.9	23.9
C025	30.0	26.0	29.9	23.9
C030	35.0	30.3	34.9	34.9
C040	45.0	39.0	44.9	44.9
C050	57.0	49.4	56.8	56.8
C075	85.0	73.6	84.7	84.7
C100	109.0	94.4	108.6	108.6
C125	138.0	119.5	137.4	137.4
C150	158.0	136.8	157.4	157.4
C200	210.0	181.9	209.1	209.1

Drive Enclosure Type

The first character **E** indicates enclosure code.

The second character indicates the type of enclosure as initially shipped from the factory.

O = Open style (IP00)
A = NEMA/UL Type 1 (IP20)
C = NEMA/UL Type 4 (IP56)
J = NEMA/UL Type 12 (IP54)

The third character indicates enclosure size by amp rating.

D = 003, 005, 007, or 010 drive ratings
E = 015 or 020 drive ratings
F = 025 or 030 drive ratings
G = 040 or 050 drive ratings
H = 075, 100, or 125 drive ratings
J = 150 or 200 drive ratings

1336 PLUS Drives Catalog Numbers

Figure 2 describes the 1336 PLUS drive catalog numbering scheme.

Figure 2 - 1336 PLUS Drive Catalog Number Explanation

1336S — First Position — **Bulletin Number**

BR — Second Position — **Voltage**

Letter	Voltages
AQ	200-240V AC or 310V DC
BR	380-480V AC or 513-620V DC
CW	500-600V AC or 775V DC
or	
A	200-240V AC
B	380-480V AC
BP	380-480V AC (F Frame)
BX	Special Rating
C	500-600V AC
Q	310V DC
R	513-620V DC
RX	Special Rating
W	775V DC

F30 — Third Position — **Nominal HP Rating**

Code	kW (HP)
F05	0.37 (0.5)
F07	0.56 (0.75)
F10	0.75 (1)
F15	1.2 (1.5)
F20	1.5 (2)
F30	2.2 (3)
F50	3.7 (5)
F75	5.5 (7.5)
F100	7.5 (10)
007	5.5 (7.5)
010	7.5 (10)
015	11 (15)
020	15 (20)
025	18.5 (25)
030	22 (30)
040	30 (40)
050	37 (50)
060	45 (60)
075	56 (75)
100	75 (100)
125	93 (125)
150	112 (150)
200	149 (200)
250	187 (250)[1]
300	224 (300)[1]
350	261 (350)[1]
400	298 (400)[1]
450	336 (450)[1]
500	373 (500)[1]
600	448 (600)[1]

AA — Fourth Position — **Enclosure Type**

Code	Type
AA	IP 20 (NEMA 1)
AE	IP 20 (NEMA 1)/ EMC 0.37-45 kW (0.5-60 HP) only
AF	IP 65 (NEMA 4)[2]
AJ	IP 54 (NEMA 12)[2]
AN	IP 00 (Open)

EN — Fifth Position — **Language**

Code	Language
EN3	English/English V3.04
EN4	English/English V4.xx
FR3	English/French V3.04
FR4	English/French V4.xx
DE3	English/German V3.04
DE4	English/German V4.xx
IT3	English/Italian V3.04
IT4	English/Italian V4.xx
ES3	English/Spanish V3.04
ES4	English/Spanish V4.xx

MODS — Sixth Position — **Options**

Code	Description
Human Interface Module, IP 20 (Type 1)	
HAB	Blank – No Functionality
HAP	Programmer Only
HA1	Programmer/Controller w/Analog Pot
HA2	Programmer/Controller w/Digital Pot
Human Interface Module, IP 65/54 (Type 4/12)	
HJP	Programmer Only
HJ2	Programmer/Controller w/Digital Pot

Code	Description
Communication Options	
GM1	Single Point Remote I/O
GM2	RS–232/422/485, DF1 & DH485
GM5	DeviceNet
Control Interface Options	
L4	TTL Contact
L4E	TTL Contact & Encoder Feedback
L5	24V AC/DC
L5E	24V AC/DC & Encoder Feedback
L6	115V AC
L6E	115V AC & Encoder Feedback

[1] G Frame Drives in enclosed construction are supplied through the *Configured Drives Program*.

[2] D through G Frame drives in IP65 (NEMA/UL Type 4) and IP54 (NEMA/UL Type 12) configurations are supplied through the *Configured Drives Program*.

Table 4 - 1336 PLUS Drive 380…480V Input/Output Current Ratings

	Constant Torque				Variable Torque			
Cat. No.	**Input kVA**	**Input Amps**	**Output kVA**	**Output Amps**	**Input kVA**	**Input Amps**	**Output kVA**	**Output Amps**
BRF05	0.9-1.0	1.3	0.9	1.1	0.9…1.1	1.4	1.0	1.2
BRF07	1.3…1.6	2.0	1.3	1.6	1.4…1.7	2.1	1.4	1.7
BRF10	1.7…2.1	2.6	1.7	2.1	1.8…2.2	2.8	1.8	2.3
BRF15	2.2…2.6	3.3	2.2	2.8	2.3…2.8	3.5	2.4	3.0
BRF20	3.0…3.7	4.6	3.0	3.8	3.2…3.8	4.8	3.2	4.0
BRF30	4.2…5.1	6.4	4.2	5.3	4.7…5.7	7.2	4.8	6.0
BRF50	6.6…8.0	10.0	6.7	8.4	7.0…8.5	10.7	7.2	9.0
BRF75	9.5…11.6	14.5	11.2	14.0	12.2…14.7	18.5	13.9	17.5
BRF100	12.2…14.7	18.5	13.9	17.5	17.1…20.7	26.0	19.9	25.0
B007	8…11	13	10	12.5	9…12	14	11	14
B010	11…14	17	13	16.1	14…18	22	17	21
B015	16…21	25	19	24.2	18…23	28	22	27
B020	21…26	32	25	31	23…29	35	27	34
B025	26…33	40	31	39	28…36	43	33	42
B030	30…38	46	36	45	32…41	49	38	48
BX040	40…50	61	47	59	40…50	61	47	59
B040	38…48	58	48	60	41…52	63	52	65
B050	48…60	73	60	75	49…62	75	61	77
BX060[(1)]	62	75	61	77	62	75	61	77
B060	54…68	82	68	85	61…77	93	76	96
B075	69…87	105	84	106	78…99	119	96	120
B100	90…114	137	110	138	98…124	149	120	150
B125	113…143	172	138	173	117…148	178	143	180
BX150	148	178	143	180	148	178	143	180
B150	130…164	197	159	199	157…198	238	191	240
B200	172…217	261	210	263	191…241	290	233	292
B250	212…268	322	259	325	212…268	322	259	325
BP250	212…268	322	259	325	235…297	357	287	360
BX250	212…268	322	259	325	228…288	347	279	360
B300	228…288	347	279	360	261…330	397	319	425
BP300	235…297	357	287	360	277…350	421	339	425
B350	261…330	397	319	425	294…371	446	359	475
BP350	277…350	421	339	425	310…392	471	378	475
B400	294…371	446	359	475	326…412	496	398	525
BP400	310…392	471	378	475	347…438	527	424	532
B450	326…412	496	398	525	372…470	565	454	590
BP450	347…438	527	424	532	347…438	527	424	532
B500	372…470	565	454	590	437…552	664	534	670
B600	437…552	664	534	670	437…552	664	534	670

(1) 480 volts only.

Table 5 - 1336 PLUS Drive 500…600V Input/Output Current Ratings

Cat. No.	Constant Torque				Variable Torque			
	Input kVA	Input Amps	Output kVA	Output Amps	Input kVA	Input Amps	Output kVA	Output Amps
CWF10	2.1…2.5	2.4	2.1	2	2.1…2.5	2.4	2.1	2
CWF20	4.2…5.0	4.8	4.2	4	4.2…5.0	4.8	4.2	4
CWF30	6.2…7.5	7.2	6.2	6	6.2…7.5	7.2	6.2	6
CWF50	8.3…10.0	9.6	8.3	8	8.3…10.0	9.6	8.3	8
C007	9…11	10	10	10	9…11	10	10	10
C010	11…13	12	12	12	11…13	12	12	12
C015	17…20	19	19	19	17…20	19	19	19
C020	21…26	25	24	24	21…26	25	24	24
C025	27…32	31	30	30	27…32	31	30	30
C030	31…37	36	35	35	31…37	36	35	35
C040	38…45	44	45	45	38…45	44	45	45
C050	48…57	55	57	57	48…57	55	57	57
C060	52…62	60	62	62	52…62	60	62	62
C075	73…88	84	85	85	73…88	84	85	85
C100	94…112	108	109	109	94…112	108	109	109
C125	118…142	137	137	138	118…142	137	137	138
C150 (1)	144…173	167	167	158	144…173	167	167	158
C200 (1)	216…260	250	252	252	216…260	250	252	252
C250	244…293	282	283	284	244…293	282	283	284
CX300	256…307	295	297	300	256…307	295	297	300
C300	258…309	297	299	300	258…309	297	299	300
C350	301…361	347	349	350	301…361	347	349	350
C400	343…412	397	398	400	343…412	397	398	400
C450	386…464	446	448	450	386…464	446	448	450
C500	429…515	496	498	500	429…515	496	498	500
C600	515…618	595	598	600	515…618	595	598	600

(1) In firmware versions 2.04 and below, the factory default PWM frequency is 4 kHz. The drive must be reprogrammed to 2 kHz to achieve the listed current ratings.

Table 6 - 1336 PLUS Three-phase Drive Rating

Three-phase Drive Rating[1]			Frame Reference
200…240V	**380…480V**	**500…600V**	
0.37…0.75 kW 0.5…1 Hp	0.37…1.2 kW 0.5…1.5 Hp		A1
1.2…1.5 kW 1.5…2 Hp	1.5…2.2 kW 2…3 Hp		A2
2.2…3.7 kW 3…5 Hp	3.7 kW 5 Hp		A3
	5.5…7.5 kW 7.5…10 Hp	0.75…3.7 kW 1…5 Hp	A4
5.5…11 kW 7.5…15 Hp	5.5…22 kW 7.5…30 Hp	5.5…15 kW 7.5…20 Hp	B1/B2
15…22 kW 20…30 Hp	30…45 kW 40…60 Hp	18.5…45 kW 25…60 Hp	C
30…45 kW 40…60 Hp	45…112 kW 60…150 Hp	56…93 kW 75…125 Hp	D
56…93 kW 75…125 Hp	112…187 kW 150…250 Hp	112…187 kW 150…250 Hp	E
	112…336 kW 250…450 Hp	187…336 kW 250…450 Hp	F
	187…448 kW 250…600 Hp	224…448 kW 300…600 Hp	G

(1) kW and Hp are constant torque.

1336 PLUS II Drives Catalog Numbers

Figure 3 describes the 1336 PLUS II drive catalog numbering scheme.

Figure 3 - 1336 PLUS II Drive Catalog Number Explanation

1336F – BR F30 – AA – EN – MODS

First Position
Bulletin Number

Second Position
Voltage

Letter	Voltages
AQ	200-240V AC or 310V DC
BR	380-480VAC or 513-620V DC
CW	500-600V AC or 775V DC
A	200-240V AC
B	380-480V AC
BP/BPR④	380-480V AC (F Frame)
BX	Special Rating
C	500-600V AC
CP/CPR④	500-600V AC (F Frame)
Q	310V DC
R	513-620V DC
RX	Special Rating
W	775V DC

Third Position
Nominal HP Rating

Refer to table below for ratings and possible voltage combinations.

Fourth Position
Enclosure Type

Code	Type
AA	IP 20 (NEMA 1)
AE	IP 20 (NEMA 1)/EMC
AF	IP 65 (NEMA 4)③
AJ	IP 54 (NEMA 12)③
AN	IP 00 (Open)

Fifth Position
Language Group①

Code	Language
EN	English
FR	French
DE	German
IT	Italian
ES	Spanish
JP	Japanese ⑤

Sixth Position
Options

Code	Description
Human Interface Module, Snap-In, IP20 (NEMA Type 1)	
HASB	Snap-In Cradle/Blank Plate
HASP	Programmer Only
HCSP	Programmer Only & Upload/Download Capability
HAS1	Programmer/Controller w/Analog Pot
HCS1	Programmer/Controller w/Analog Pot & Upload/Download Capability
HAS2	Programmer/Controller w/Digital Pot
HCS2	Programmer/Controller w/Digital Pot & Upload/Download Capability
Human Interface Module, IP65/54 (NEMA Type 4/12)	
HJP	Programmer Only
HJ2	Programmer/Controller w/Digital Pot
Communication Options –- B Frame & Up (Adapter 6)	
GM1	Single Point Remote I/O B Frame
GM2	RS-232/422/485, DF1 & DH485 B Frame
GM5	DeviceNet™
GM6	Enhanced DeviceNet™
Communication Options –- All Frames (Adapter 1)	
GMS1	GM1 with Snap-In Cradle
GMS2	GM2 with Snap-In Cradle
GMS5	GM5 with Snap-In Cradle
GMS6	GM6 with Snap-In Cradle
Control Interface Options	
L4	TTL Contact
L4E	TTL Contact & Encoder Feedback
L7E	TTL Contact & Encoder Fdbck. for use with Encoder Loss Detection
L5	24V AC/DC
L5E	24V AC/DC & Encoder Feedback
L8E	24V AC/DC & Encoder Feedback for use with Encoder Loss Detection
L6	115V AC
L6E	115V AC & Encoder Feedback
L9E	115V AC & Encoder Feedback for use with Encoder Loss Detection
Analog Interface Options – Slot A	
• Choose No More than One – Configurable Inputs/Outputs are 10V or 20mA	
LA2	Two Isolated Configurable Inputs
LA6	One Isolated Bi-polar Input (±10V or ±20mA) and One Isolated Thermistor Input
LA7	One Isolated Bi-polar Input (±10V or ±20mA) and One Isolated Configurable Input
Analog Interface Options – Slot B	
• Choose No More than One – Configurable Inputs/Outputs are 10V or 20mA	
LA1	Single-ended, Non-isolated Configurable (including Pot) Input & 2 Single-ended, Non-isolated Outputs (1 - Configurable, 1 - 20mA)
LA3	Two Isolated Configurable Outputs
LA4	One Isolated Configurable Input & Output
LA5	Isolated Pulse Input, Non-isolated Pulse Output & Single-ended, Non-isolated Configurable Output
Common Mode Choke –- F & G Frame (must be specified for F Frame)	
CM	Internal Common Mode Choke (factory installed)
NCM	No Common Mode Choke

Voltage and Nominal HP Rating Combinations

Code	Rating	AQ	BR	CW	A	B	BP/ BPR	BX	C	CP/ CPR	Q	R	RX	W
F05	0.37 (0.5)	●	●											
F07	0.56 (0.75)	●	●											
F10	0.75 (1)	●	●	●										
F15	1.2 (1.5)	●	●											
F20	1.5 (2)	●	●	●										
F30	2.2 (3)	●	●	●										
F50	3.7 (5)	●	●	●										
F75	5.5 (7.5)	●	●	●										
F100	7.5 (10)		●	●										
F150	11 (15)		●	●										
F200	15 (20)		●	●										
007	5.5 (7.5)				●						●			
010	7.5 (10)				●						●			
015	11 (15)				●	●					●	●		
020	15 (20)				●	●					●	●		
025	18.5 (25)				●	●			●		●	●		●
030	22 (30)				●	●			●		●	●		●
040	30 (40)				●	●		●	●		●	●	●	●
050	37 (50)				●	●			●		●	●		●
060	45 (60)				●	●		●	●		●	●	●	●
075	56 (75)				●	●			●		●	●		●
100	75 (100)				●	●			●		●	●		●
125	93 (125)				●	●			●		●	●		●
150	112 (150)					●		●	●			●	●	●
200	149 (200)					●			●			●		●
250	187 (250)②					●	●	●	●			●	●	●
300	224 (300)②					●	●		●			●		●
350	261 (350)②					●	●		●	●		●		●
400	298 (400)②					●	●		●	●		●		●
450	336 (450)②					●	●		●			●		●
500	373 (500)②					●			●			●		●
600	448 (600)					●			●			●		●

① Language must be specified to ensure shipment of appropriate User Manual.

② G Frame Standard Drives in enclosed construction are supplied through the *Configured Drives Program* and will have an "A" suffix after the HP rating.

③ D through G Frame drives in IP 65 (NEMA Type 4) and IP 54 (NEMA Type 12) configurations are supplied through the Configured Drives Program.

④ "xPR" has a "roll-in" type chassis. ⑤ Not available with v5.001 & later.

Table 7 - 1336 PLUS II Drive 380…480V Input/Output Current Ratings

Cat. No.	Constant Torque (380…480V Drives)				Variable Torque (480V Drives)				Variable Torque (400V Drives)			
	Input kVA	Input Amps	Output kVA	Output Amps	Input kVA	Input Amps	Output kVA	Output Amps	Input kVA	Input Amps	Output kVA	Output Amps
BRF05	0.9-1.0	1.3	0.9	1.1	1.1	1.4	1.0	1.2	0.9	1.4	1.0	1.33
BRF07	1.3…1.6	2.0	1.3	1.6	1.7	2.1	1.4	1.7	1.4	2.1	1.4	1.89
BRF10	1.7…2.1	2.6	1.7	2.1	2.2	2.8	1.8	2.3	1.8	2.8	1.8	2.55
BRF15	2.2…2.6	3.3	2.2	2.8	2.8	3.5	2.4	3.0	2.3	3.5	2.4	3.33
BRF20	3.0…3.7	4.6	3.0	3.8	3.8	4.8	3.2	4.0	3.2	4.8	3.2	4.44
BRF30	4.2…5.1	6.4	4.2	5.3	5.7	7.2	4.8	6.0	4.7	7.2	4.8	6.66
BRF50	6.6…8.0	10.0	6.7	8.4	8.5	10.7	7.2	9.0	7.0	10.7	7.2	9.99
BRF75	8.9…11.3	13.6	10.6	13.3	13.0	15.7	12.3	15.4	10.3	15.7	12.3	19.43
BRF100	10.8…13.6	16.4	12.8	16.1	18.6	22.4	17.5	22	14.7	22.4	17.5	22.00
BRF150	16.1…20.4	24.5	19.1	24	20.4	24.5	19.1	24	16.1	24.5	19.1	24.00
BRF200	18.0…23.0	28	22	27	23	28	22	27	18	28	22	27.75
B015	16…21	25	19	24.2	23	28	22	27	18	28	22	29.97
B020	21…26	32	25	31	29	35	27	34	23	35	27	37.74
B025	26…33	40	31	39	36	43	33	42	28	43	33	46.62
B030	30…38	46	36	45	41	49	38	48	32	49	38	53.28
BX040	40…50	61	47	59	50	61	47	59	40	61	47	66.60
B040	38…48	58	48	60	52	63	52	65	41	63	52	72.15
B050	48…60	73	60	75	62	75	61	77	49	75	61	83.25
BX060[(1)]	62	75	61	77	62	75	61	77	62	75	61	85.47
B060	54…68	82	68	85	77	93	76	96	61	93	76	106.56
B075	69…87	105	84	106	99	119	96	120	78	119	96	133.20
B100	90…114	137	110	138	124	149	120	150	98	149	120	166.50
B125	113…143	172	138	173	148	178	143	180	117	178	143	199.80
BX150	148	178	143	180	148	178	143	180	148	178	143	199.80
B150	130…164	197	159	199	198	238	191	240	157	238	191	266.40
B200	172…217	261	210	263	241	290	233	292	191	290	233	324.12
B250	212…268	322	259	325	268	322	259	325	212	322	259	360.75
BP/BPR250	212…268	322	259	325	297	357	287	360	235	357	287	399.60
BX250	212…268	322	259	325	297	357	287	360	228	347	279	399.60
B300	235…297	357	287	360	350	421	339	425	261	397	319	471.75
BP/BPR300	235…297	357	287	360	350	421	339	425	277	421	339	471.75
B350	277…350	421	339	425	392	471	378	475	294	446	359	527.25
BP/BPR350	277…350	421	339	425	392	471	378	475	310	471	378	527.25
B400	310…392	471	387	475	433	521	418	525	326	496	398	582.75
BP/BPR400	310…392	471	378	475	438	527	424	532	347	527	424	532.05
B450	343…433	521	418	525	486	585	470	590	372	565	454	654.90
BP/BPR450	347…438	527	424	532	438	527	424	532	347	527	424	532.00
B500	385…486	585	470	590	552	664	534	670	437	664	534	743.70
B600	437…552	664	534	670	552	664	534	670	437	664	534	743.70

(1) 480 volts only.

Table 8 - 1336 PLUS II Drive 500…600V Input/Output Current Ratings

Cat. No.	500…600V Drives				600V Drives			
	Input kVA	Input Amps	Output kVA	Output Amps	Input kVA	Input Amps	Output kVA	Output Amps
CWF10	2.1…2.5	2.4	2.1	2	2.5	2.4	2.1	2
CWF20	4.2…5.0	4.8	4.2	4	5	4.8	4.2	4
CWF30	6.2…7.5	7.2	6.2	6	7.5	7.2	6.2	6
CWF50	8.3…10.0	9.6	8.3	8	10	9.6	8.3	8
CWF75	9.0…11.0	10	10	10	11	10	10	10
CWF100	11.0…13.0	12	12	12	13	12	12	12
CWF150	17.0…20.0	19	19	19	20	19	19	19
CWF200	21.0…26.0	25	24	24	26	25	24	24
C025	27…32	31	30	30	32	31	30	30
C030	31…37	36	35	35	37	36	35	35
C040	38…45	44	45	45	45	44	45	45
C050	48…57	55	57	57	57	55	57	57
C060	52…62	60	62	62	62	60	62	62
C075	73…88	84	85	85	88	84	85	85
C100	94…112	108	109	109	112	108	109	109
C125	118…142	137	137	138	142	137	137	138
C150	144…173	167	167	168	173	167	167	168
C200	217…261	251	251	252	261	251	251	252
C250	244…293	282	283	284	293	282	283	284
CX300	256…307	295	297	298	307	295	297	298
C300	258…309	297	299	300	309	297	299	300
C350	301…361	347	349	350	361	347	349	350
CP/CPR350	301…361	347	349	350	361	347	349	350
C400	343…412	397	398	400	412	397	398	400
CP/CPR400	343…412	397	398	400	412	397	398	400
C450	386…464	446	448	450	464	446	448	450
C500	429…515	496	498	500	515	496	498	500
C600	515…618	595	598	600	618	595	598	600

Table 9 - 1336 PLUS II Three-phase Drive Rating

Three-phase Drive Rating[1]			Frame Reference
200…240V	**380…480V**	**500…600V**	
0.37…0.75 kW 0.5…1 Hp	0.37…1.2 kW 0.5…1.5 Hp		A1
1.2…1.5 kW 1.5…2 Hp	1.5…2.2 kW 2…3 Hp		A2
2.2…3.7 kW 3…5 Hp	3.7 kW 5 Hp		A3
5.5 kW 7.5 Hp	5.5…15 kW 7.5…20 Hp	0.75…15 kW 1…20 Hp	A4
5.5…11 kW 7.5…15 Hp	11…22 kW 15…30 Hp		B1/B2
15…22 kW 20…30 Hp	30…45 kW 40…60 Hp	18.5…45 kW 25…60 Hp	C
30…45 kW 40…60 Hp	45…112 kW 60…150 Hp	56…93 kW 75…125 Hp	D
56…93 kW 75…125 Hp	112…187 kW 150…250 Hp	112…224 kW 150…300 Hp	E
	187…336 kW 250…450 Hp	261…298 kW 350…400 Hp	F
	187…448 kW 250…600 Hp	224…448 kW 300…600 Hp	G

(1) kW and Hp are constant torque.

1336 FORCE Drives Catalog Numbers

Figure 4 describes the 1336 FORCE drive catalog numbering scheme.

Figure 4 - 1336 FORCE Drive Catalog Number Explanation

1336T	–	B	007	–	AN	–	GT1	EN	–	MODS
Bulletin Number		Drive Rating *(must be specified)*	Nominal HP Rating *(must be specified)*		Enclosure Type *(must be specified)*		Adapter Type *(must be specified)*	Adapter Language *(must be specified)*		Options *(specify as needed)*

Code	Voltage
A	200-240V AC
B	380-480V AC
BP	380-480V AC (F Frame)
BPR	380-480V AC (F Frame) Roll-In Style
BX	Special Rating
C	500-600V AC
CP	500-600V AC (F Frame)
CPR	500-600V AC (F Frame) Roll-In Style
CX	Special Rating
Q	310V DC
R	513-620V DC
RX	Special Rating
W	775V DC

Code	kW (HP)
001	0.75 (1)
003	2.2 (3)
007	5.5 (7.5)
010	7.5 (10)
015	11 (15)
020	15 (20)
025	18.5 (25)
030	22 (30)
040	30 (40)
050	37 (50)
060	45 (60)
075	56 (75)
100	75 (100)
125	93 (125)
150	112 (150)
200	149 (200)
250	187 (250)
300	224 (300)
350	261 (350)
400	298 (400)
450	336 (450)
500	373 (500)
600	448 (600)
650	485 (650)

Code	Enclosure
AA	IP 20 (NEMA 1)
AE	IP 20 (NEMA 1)/EMC
AF	IP 65 (NEMA 4)
AJ	IP 54 (NEMA 12)
AN	IP 00 (Open)

Code	Adapter
GT0	No Adapter❶
GT1	PLC Comm.
GT2	Standard
GT3	ControlNet

Code	Language
EN	English
FR	French
DE	German
IT	Italian
ES	Spanish

Code	Description
Human Interface Module, IP 20 (NEMA Type 1)	
HAB	Blank - No Functionality
HAP	Programmer Only
HA1	Programmer/Controller w/Analog Pot
HA2	Programmer/Controller w/Digital Pot
Human Interface Module, IP 65/54 (NEMA Type 4/12)	
HJP	Programmer Only
HJ2	Programmer/Controller w/Digital Pot
Common Mode Choke	
NCM	No Common Mode Choke (F Frame)
CM	Internal Common Mode Choke
Environmental Options	
MX3	Conformal coating of printed circuit boards

Code	Description
Communication Options - B Frame & Up	
GM1	Single Point Remote I/O
GM2	RS-232/422/485, DF1 & DH485
GM5	DeviceNet
GM6	Enhanced DeviceNet
Control Interface Options	
L4	TTL Contact
L5	24V AC/DC
L6	24V AC/DC

❶ An Adapter board is required to make the drive functional. If the "-GT0" option (no adapter) is chosen, then the adapter kit must be added after shipment.

Table 10 - 1336 FORCE Drive 380…480V Input/Output Current Ratings

Cat. No.	Input kVA	Input Amps	Output kVA	Output Amps
B001	2	3	2	2.5
B003	4-5	6	5	6.0
B007	9…12	14	11	13.9
B010	14…18	22	17	20.9
B015	18…23	28	22	27.2
B020	23…29	35	27	33.7
B025	23…26	43	33	41.8
B030	32…41	49	38	48.2
BX040	40…50	62	47	58.7
B040	41…52	63	52	64.5
B050	48…60	75	61	78.2
BX060	62	75	61	78.2
B060	61…77	93	76	96.9
B075	78…99	119	96	120.3
B100	98…124	149	120	149.2
B125	117…148	178	143	180.4
BX150	148	178	143	180.4
B150	157…198	238	191	240.0
B200	191…241	290	233	291.4
BX250	231…291	350	282	353.6
B250	212…268	322	259	327.4
B300	265…335	403	324	406.4
B350	300…379	455	366	459.2
B400	330…416	501	402	505.1
B450	372…470	565	454	570.2
B500	391…494	594	477	599.2
B600	439…555	668	537	673.4
BP250	230…291	350	282	353.6
BP300	265…334	402	324	406.4
BP350	300…378	455	366	459.2
BP400	313…396	476	383	481.0
BP450	346…437	526	424	531.7
B700C	517…625	835	677	850
B800C	647…817	965	783	983
12B700C	517…625	835	677	850
12B800C	647…817	965	783	983

Table 11 - 1336 FORCE Drive 575V AC Input/Output Current Ratings

Cat. No.	Input kVA	Input Amps	Output kVA	Output Amps
C001	2…3	3	2	2.5
C003	5…6	6	6	6
C007	9…11	10	10	9.9
C010	11…13	12	12	12
C015	17…20	19	19	18.9
C020	21…26	25	24	23.6
C025	27…32	31	30	30
C030	31…37	36	35	34.6
C040	40…48	46	45	45.1
C050	48…57	55	57	57.2
C060	52…62	60	62	61.6
C075	73…88	84	85	85.8
C100	94…112	108	109	109.1
C125	118…142	137	137	138.6
C150	136…163	157	157	159.7
C200	217…261	251	251	252.5
C250	244…293	282	283	283.6
C300	256…307	296	297	298
C350	304…364	351	352	353.6
C400	349…419	403	405	406.4
C450	394…473	455	457	459.2
C500	434…520	501	503	505.1
C600	514…617	594	597	599.2
C650	578…694	668	671	673.4
C700	616…739	756	767	770
C800	639…767	786	797	800
12C700C	616…739	756	767	770
12C800C	639…767	786	797	800

1336 IMPACT Drives Catalog Numbers

Figure 5 describes the 1336 IMPACT drive catalog numbering scheme.

Figure 5 - 1336 IMPACT Drive Catalog Number Explanation

1336E — First Position, **Bulletin Number**

AQ — Second Position, **Voltage**

Letter	Voltages
AQ	200–240VAC or 310VDC
BR	380–480VAC or 513±620VDC
CW	500–600VAC or 775VDC
or	
A	200–240VAC
B	380–480VAC
BP	380–480VAC (F Frame)
BX	Special Rating
C	500–600VAC
Q	310VDC
R	513–620VDC
RX	Special Rating
W	775VDC

F05 — Third Position, **Nominal HP Rating**

Code	kW (HP)
F05	0.37 (0.5)
F07	0.56 (0.75)
F10	0.75 (1)
F15	1.2 (1.5)
F20	1.5 (2)
F30	2.2 (3)
F50	3.7 (5)
F75	5.5 (7.5)
F100	7.5 (10)
007	5.5 (7.5)
010	7.5 (10)
015	11 (15)
020	15 (20)
025	18.5 (25)
030	22 (30)
040	30 (40)
050	37 (50)
060	45 (60)
075	56 (75)
100	75 (100)
125	93 (125)
150	112 (150)
200	149 (200)
250	187 (250)[1]
300	224 (300)[1]
350	261 (350)[1]
400	298 (400)[1]
450	336 (450)[1]
500	373 (500)[1]
600	448 (600)[1]
650	485 (650)[1]
700C	522 (700)[1]
800C	597 (800)

AA — Fourth Position, **Enclosure Type**

Code	Type
AA	NEMA 1 (IP20)
AE	NEMA 1 (IP20)/ EMC 0.37–45 kW (0.5–60 HP) only
AF	NEMA 4 (IP65)[2]
AJ	NEMA 12 (IP54)[2]
AN	Open (IP00)

EN — Fifth Position, **Language**

Code	Language
EN	English/English
FR	English/French
ES	English/Spanish
DE	English/German
IT	English/Italian
PT	English/ Portuguese

mods — Sixth Position, **Options**

Code	Description
Human Interface Module, IP 20 (NEMA Type 1)	
HAB	Blank — No functionality
HAP	Programmer Only
HA1	Programmer/Controller w/Analog Pot
HA2	Programmer/Controller w/Digital Pot
Human Interface Module, IP 65/54 (NEMA Type4/12)	
HJP	Programmer Only
HJ2	Programmer/Controller w/Digital Pot
Communication Options	
GM1	Single Point Remote I/O
GM2	RS–232/422/485, DF1, & DH485
GM5	DeviceNet™
Control Interface Options	
L4	TTL Contact
L7E	TTL Contact & Encoder Feedback
L5	24VAC/DC
L8E	24VAC/DC & Encoder Feedback
L6	115VAC
L9E	115VAC & Encoder Feedback

1 G frame drives in enclosed construction and all H frame drives are supplied only through the Configured Drives Program.

2 D – G frame drives in IP65 (NEMA/UL Type 4) and IP54 (NEMA/UL Type 12) configurations are supplied through the Configured Drives Program.

Note: BPR indicates F frame roll-in units

Table 12 - 1336 IMPACT Drive 380…480V Input/Output Current Ratings

Cat. No.	Input kVA	Input Amps	Output kVA	Output Amps
BRF05	1.54	1.4	0.96	1.2
BRF07	2.18	2.1	1.35	1.7
BRF10	2.96	2.8	1.83	2.3
BRF15	3.86	3.5	2.39	3.0
BRF20	5.14	4.8	3.19	4.0
BRF30	7.71	7.2	4.78	6.0
BRF50	11.57	12.0	7.17	10.4
BRF75	19.92	14	13.94	13.9
BRF100	28.46	25	19.92	24.0
B015	18…23	28	22	27.2
B020	23…29	35	27	33.7
B025	23…26	43	33	41.8
B030	32…41	49	38	48.2
BX040	40…50	62	47	58.7
B040	41…52	63	52	64.5
B050	48…60	75	61	78.2
BX060	62	75	61	78.2
B060	61…77	93	76	96.9
B075	78…99	119	96	120.3
B100	98…124	149	120	149.2
B125	117…148	178	143	180.4
BX150	148	178	143	180.4
B150	157…198	238	191	240.0
B200	191…241	290	233	291.4
B250	212…268	322	259	327.4
B/BP300	265…335	403	324	406.4
BPR300	265…334	402	324	406.4
B/BP350	300…379	455	366	459.2
BPR350	300…379	455	366	459.2
B400	330…416	501	402	505.1
BP400	313…396	476	383	481.0
BPR400	313…396	476	383	481.0
B450	372…470	565	454	570.2
BP450	346…437	526	424	531.7
BPR450	346…437	526	424	531.7
B500	391…494	594	477	599.2
B600	439…555	668	537	673.4
BP300	265…334	402	324	406.4
BP350	300…378	455	366	459.2
BP400	313…396	476	383	481.0
BP450	346…437	526	424	531.7
B700C	517…625	835	677	850
B800C	647…817	965	783	983
12B700C	517…625	835	677	850
12B800C	647…817	965	783	983

Table 13 - 1336 IMPACT Drive 500…600V Input/Output Current Ratings

Cat. No.	Input KVA	Input Amps	Output KVA	OutPut Amps
CWF10	3.56	3	2.49	2.5
CWF20	5.98	4	4.18	4.2
CWF30	8.54	6	5.98	6
CWF50	11.24	8	7.87	7.9
CWF75	9…11	10	10	9.9
CWF100	11…13	12	12	12
C015	17…20	19	19	18.9
C020	21…26	25	24	23.6
C025	27…32	31	30	30
C030	31…37	36	35	34.6
C040	40…48	46	45	45.1
C050	48…57	55	57	57.2
C060	52…62	60	62	61.6
C075	73…88	84	85	85.8
C100	94…112	108	109	109.1
C125	118…142	137	137	138.6
C150	136…163	157	157	159.7
C200	217…261	251	251	252.6
C250	244…293	282	283	283.6
C300	256…307	296	297	298
CX300	256…307	295	297	298
C350	304…364	351	352	353.6
CP350	301…361	347	349	350
CPR350	301…361	347	349	350
C400	349…419	403	405	406.4
CP400	343…412	397	398	400
CPR400	343…412	397	398	400
C450	394…473	455	457	459.2
C500	434…520	501	503	505.1
C600	514…617	594	597	599.2
C650	578…694	668	671	673.4
C700C	616…739	756	767	770
C800C	639…767	786	797	800
12C700C	616…739	756	767	770
12C800C	639…767	786	797	800

Table 14 - 1336 IMPACT Drive Frame kW and Hp Designator

200…240V	380…480 V	500…600V	Frame Designation
0.37…0.75 kW 0.5…1 Hp	0.37…1.2 kW 0.5…1.5 Hp		A1
1.2…1.5 kW 1.5…2 Hp	1.5…2.2 kW 2…3 Hp		A2
2.2…3.7 kW 3…5 Hp	3.7 kW 5 Hp		A3
	5.5…7.5 kW 7.5…10 Hp	0.75…3.7 kW 1…10 Hp	A4
5.5…11 kW 7.5…15 Hp	5.5…22 kW 15…30 Hp	5.5…15 kW 15…20 Hp	B
15…22 kW 20…30 Hp	30…45 kW 40…60 Hp	18.5…45 kW 25…60 Hp	C
30…45 kW 40…60 Hp	45…112 kW 60…150 Hp	56…93 kW 75…125 Hp	D
56…75 kW 75…125 Hp	112…187 kW 150…250 Hp	112…224 kW 150…300 Hp	E
	224…336 kW 300…450 Hp		F
	224…448 kW 300…600 Hp	224…448 kW 300…600 Hp	G
	522…597 kW 700…800 Hp	522…597 kW 700…800 Hp	H

PowerFlex 750-Series Drives Catalog Numbers

Table 15 on page 35 and Table 16 on page 36 describe the 750-Series drives catalog numbering scheme.

Table 15 - PowerFlex 750-Series Drive Catalog Number Explanation

1…3	*4*	*5*	*6*	*7*	*8…10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	
20G	1	A	N	D	248	A	A	0	N	N	N	N	N	-LD-P3-P11…
a	*b*	*c*	*d*	*e*	*f1…f4*	*g*	*h*	*i*						*Cabinet Options (21G)*

a

Drive		
Code	Type	Frames
20F	PowerFlex 753	1…7
20G	PowerFlex 755	1…10
21G	PowerFlex 755 Drive with Options	8…10

b

Future Use

c

Input Type		
Code	Description	Frames
1	AC Input with Precharge, includes DC Terminals	1…5 8…10
4	DC Input with Precharge	5…10
A	AC Input with Precharge, no DC Terminals	6…8 (1)

(1) The DC Bus Bar kit (20-750-DCBB1-Fx) is available for Frames 6…7 AC input drives requiring DC bus terminals.

d

Enclosure		
Code	Description	Frames
R	IP20, NEMA/UL Type Open, Frame 1	1
F (1)	Flange (NEMA/UL Type 4X/12 back)	2…5
G	IP54, NEMA/UL Type 12	2…7
N (2)	IP20/IP00, NEMA/UL Type Open	2…7
B (3)	IP20, NEMA/UL Type 1, 600 mm (23.6 in.) Deep, Standard Cabinet Color (RAL 7032)	8…10
J (3)	IP54, UL Type 12, 800 mm (31.5 in.) Deep, Standard Cabinet Color (RAL 7032)	8…10
K (3)	IP54, NEMA 12, 2500 MCC Style Cabinet & Options w/MCC Power Bus, 800 mm (31.5 in.) Deep, Standard Cabinet Color (RAL 7032)	8…10
L (3)	IP20, NEMA/UL Type 1, 800 mm (31.5 in.) Deep, Standard Cabinet Color (RAL 7032)	8…10
P (3)	IP20, NEMA/UL Type 1, 2500 MCC Style Cabinet & Options w/MCC Power Bus, 800 mm (31.5 in.) Deep, Standard Cabinet Color (RAL 7032)	8…10
W (3)	IP20, NEMA/UL Type 1, 2500 MCC Style Cabinet & Options w/MCC Power Bus, 800 mm (31.5 in.) Deep, CenterLine 2100 Gray (ASA49)	8…10
Y (3)	IP54, NEMA 12, 2500 MCC Style Cabinet & Options w/MCC Power Bus, 800 mm (31.5 in.) Deep, CenterLine 2100 Gray (ASA49)	8…10
T	IP00, UL Open Type without Control POD	8…10

(1) For Frames 6…7 a user installed Flange kit (20-750-FLNG4-Fx) is available to convert a Code N drive that provides a NEMA/UL Type 4X/12 back.
(2) Frames 2…5 are IP20, Frames 6…7 are IP00.
(3) Available as a drive with options (21G).

e

Voltage Rating	
Code	Voltage
C	400V AC/540V DC
D	480V AC/650V DC
E	600V AC/810V DC
F	690V AC/932V DC (not UL listed)

f1

ND Rating									
400V, 50 Hz Input									
Code	Amps	kW	Frame						
			Enclosure Code						
			B, J, L, T	F	G	N	K, P, W, Y	R	
2P1	2.1	0.75	–	2	2	2	–	1	–
3P5	3.5	1.5							
5P0	5.0	2.2							
8P7	8.7	4							
011	11.5	5.5		3	3	3			
015	15.4	7.5							
022	22	11							
030	30	15							
037	37	18.5							
043	43	22							
060	60	30		4	4	4			
072	72	37			5				
085	85	45		5		5			
104	104	55			6				
140	140	75		(1)		6			
170	170	90							
205	205	110							
260	260	132			7				
302	302	160				7			
367	367	200							
456	456	250							–
460	460	250	8	–	–	–	8 (2)	–	
540	540	315							
567	567	315							
650	650	355							
750	750	400							
770	770	400							
910	910	500	9				9 (2)		
1K0	1040	560							
1K1	1090	630							
1K2	1175	710							
1K4	1465	800							
1K5	1480	850							
1K6	1590	900	10				10 (2)		
2K1	2150	1250							

(1) For Frames 6…7 a user installed Flange kit (20-750-FLNG4-Fx) is available to convert a Code N drive that provides a NEMA/UL Type 4X/12 back.
(2) Available as a drive with options (21G).

f2

ND Rating									
480V, 60 Hz Input									
Code	Amps	Hp	Frame						
			Enclosure Code						
			B, J, L, T	F	G	N	K, P, W, Y	R	
2P1	2.1	1	–	2	2	2	–	1	–
3P4	3.4	2							
5P0	5.0	3							
8P0	8.0	5							
011	11	7.5							
014	14	10							
022	22	15							
027	27	20		3	3	3			
034	34	25							
040	40	30							
052	52	40		4	4	4			
065	65	50			5				
077	77	60		5		5			
096	96	75			6				
125	125	100		(1)		6			
156	156	125							
186	186	150							
248	248	200			7				
302	302	250				7			
361	361	300							
415	415	350							–
430	430	350	8	–	–	–	8 (2)	–	
485	485	400							
545	545	450							
617	617	500							
710	710	600							
740	740	650							
800	800	700	9				9 (2)		
960	960	800							
1K0	1045	900							
1K2	1135	1000							
1K3	1365	1100							
1K4	1420	1250							
1K5	1525	1350	10				10 (2)		
2K0	2070	1750							

(1) For Frames 6…7 a user installed Flange kit (20-750-FLNG4-Fx) is available to convert a Code N drive that provides a NEMA/UL Type 4X/12 back.
(2) Available as a drive with options (21G).

Table 16 - PowerFlex 750-Series Drive Catalog Number Explanation (continued)

1…3	*4*	*5*	*6*	*7*	*8…10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	
20G	1	A	N	D	248	A	A	0	N	N	N	N	N	-LD-P3-P11…
a	*b*	*c*	*d*	*e*	*f1…f4*	*g*	*h*	*i*						*Cabinet Options (21G)*

f3

ND Rating								
600V, 60 Hz Input								
Code	Amps	Hp	Frame					
			Enclosure Code					
			B, J, L, T	F	G	N	K, P, W, Y	R
1P7	1.7	1						
2P7	2.7	2						
3P9	3.9	3		3	3	3		
6P1	6.1	5						
9P0	9	7.5						
011	11	10						
012(1)	12	10		–	6	6		
017	17	15		3	3	3		
018(1)	18	15		–	6	6		
022	22	20		3	3	3		
023(1)	23	20		–	6	6		
024(1)	24	20						
027	27	25		4	4	4		
028(1)	28	25		–	6	6		
032	32	30	–	4	4	4	–	
033(1)	33	30		–	6	6		
041	41	40		5	5	5		
042(1)	42	40		–	6	6		
052	52	50		5	–	5		
053(1)	53	50						
063	63	60						
077	77	75						
099	99	100			6	6		–
125	125	125		(2)				
144	144	150						
192	192	200						
242	242	250			7	7		
289	289	300						
295	295	300						
355	355	350						
395	395	400						
435	435	450	8				8(3)	
460	460	500						
510	510	500						
595	595	600						
630	630	700						
760	760	800	9	–	–	–	9(3)	
825	825	900						
900	900	950						
980	980	1000						
1K1	1110	1100						
1K4	1430	1400	10				10(3)	

(1) Required for uncontrolled common DC bus applications. Optional for all AC applications.
(2) For Frames 6…7 a user installed Flange kit (20-750-FLNG4-Fx) is available to convert a Code N drive that provides a NEMA/UL Type 4X/12 back.
(3) Available as a drive with options (21G).

f4

ND Rating									
690V, 50 Hz Input (not UL listed)									
Code	Amps	kW	Frame						
			Enclosure Code						
			B, J, L, T	F	G	N	K, P, W, Y	R	
012	12	7.5							
015	15	11							
020	20	15							
023	23	18.5							
030	30	22							
034	34	30							
046	46	37			6	6			
050	50	45	–				–		
061	61	55							
082	82	75							
098	98	90		(1)					
119	119	110							
142	142	132							
171	171	160			7	7		–	
212	212	200							
263	263	250							
265	265	250			–	–	8(2)		
330	330	315	8						
370	370	355							
415	415	400							
460	460	450							
500	500	500							
590	590	560							
650	650	630							
710	710	710	9	–			9(2)		
765	765	750							
795	795	800							
960	960	900							
1K0	1040	1000	10				10(2)		
1K4	1400	1400							

(1) For Frames 6…7 a user installed Flange kit (20-750-FLNG4-Fx) is available to convert a Code N drive that provides a NEMA/UL Type 4X/12 back.
(2) Available as a drive with options (21G).

g

Filtering and CM Cap Configuration (1)		
Code	Filtering	Default CM Cap Connection
A	Yes	Jumper Removed
J	Yes	Jumper Installed

(1) 480V drives must select code "A." Jumpers are included for field re-configuration as desired.

h

Dynamic Braking (1)		
Code	Internal Resistor (2)	Internal Transistor (3)
A	No	Yes
N	No	No

(1) Not available on Frames 8…10, specify Code "N."
(2) Frames 1…2 only. Internal Resistor kits (20-750-DB1-Dx) sold separately.
(3) Standard on Frames 1…5, optional on 6…7.

i

Door Mounted HIM (Frames 8…10)	
Code	Operator Interface
0	No Door Mounted HIM
2	Enhanced LCD, Full Numeric, IP20
4	Enhanced LCD, Full Numeric, IP66 NEMA Type 4X/12

PowerFlex 755 w/Options (21G) Required Selections

Code	Option	Frames	Type
LD	Light Duty	8…10	System Overload Duty Cycle (1)
ND	Normal Duty		
HD	Heavy Duty		
P3	Input Thermal Magnetic Circuit Breaker	8…10	Power Disconnect (1)
P5	Input Non-Fused Molded Case Disconnect Switch	8 Only	
P14	Wiring Only Bay	8…10	Wiring Only Bay

(1) Only one option of this type ma y be selected.

PowerFlex 755 w/Options (21G) Additional Selections

Code	Option	Frames	Type
P11	Input Contactor	8 Only	Contactors (1)(2)
P12	Output Contactor		
L1	3% Input Reactor	8…9	Reactors (1)
L2	3% Output Reactor		
L3	5% Input Reactor	8 Only	
L4	5% Output Reactor		
P20	1200 Amp Bus	8…10	MCC Power Bus Capacity (1)
P22	2000 Amp Bus		
P24	3000 Amp Bus		
P30	UPS Control Bus, DC Input w/Precharge only	8…10	UPS Control Bus
X1	Auxiliary Transformer (500VA available), IP20 Cabinet Only	8 Only(3)	Auxiliary Power

(1) Only one option of this type ma y be selected.
(2) Contactor options are not available for systems with MCC power bus.
(3) Standard on all other cabinet configurations.

1336-Series Drive to PowerFlex 750-Series Drive Conversion Guide

The following tables compare rating codes, output amps, and horsepower for migrating your 1336-Series drive to a PowerFlex 750-Series drive. See the table corresponding to your existing 1336-Series drive.

Rating Codes, Output Amps, and Horsepower

IMPORTANT Side-by-side comparison is based on output amps.

Table 17 - 1336 CLASSIC to PowerFlex 750-Series Drives (480V AC)

1336 CLASSIC Drive[1]				PowerFlex 750-Series Drives			
Rating Code	Output Amps	Hp	Frame[2]	Rating Code	Output Amps	Hp (ND)	Frame
				2P1	2.1	1	1, 2
				3P4	3.4	2	
				5P0	5	3	
B003	6	3	N/A	8P0	8	5	
B005	9.6	5		011	11	7.5	
B007	13	7		014	14	10	
B010	17	10		022	22	15	2
B015	25	15		027	27	20	3
B020	33	20		034	34	25	
				040	40	30	
B025	41	25		052	52	40	4
B030	48	30					
B040	60	40		065	65	50	
B050	75	50		077	77	60	5
				096	96	75	
B075	120	75		125	125	100	6
B100	150	100		156	156	125	
B125	180	125		186	186	150	
B150	218	150		248	248	200	
B200	290	200		302	302	250	7
				361	361	300	
				415	415	350	
				430	430	350	8
				485	485	400	
				545	545	450	
				617	617	500	
				740	740	650	

(1) For 1336-Series drive constant torque applications, increase the comparable 750-Series drive by at least one rating code.

(2) The 1336 CLASSIC drive does not have a Frame reference; groupings are based on output amps.

Table 18 - 1336 CLASSIC to PowerFlex 750-Series Drives (600V AC)

1336 Classic Drive (1)				Powerflex 750-Series Drives			
Rating Code	**Output Amps**	**Hp**	**Frame(2)**	**Rating Code**	**Output Amps**	**Hp**	**Frame**
				1P7	1.7	1	3
				2P7	2.7	2	
				3P9	3.9	3	
C003	4.3	3	N/A	6P1	6.1	5	
C005	7.7	5		9	9	7.5	
C007	9.9	7.5		11	11	10	
C010	12.1	10		17	17	15	
C015	19.1	15		22	22	20	
C020	24	20		27	27	25	4
C025	30	25		32	32	30	
C030	35	30		41	41	40	5
C040	45	40		41	41	40	
C040				52	52	50	
C050	57	50		63	63	60	
C060	62	60		63	63	60	6
C060				77	77	75	
C075	85	75		99	99	100	
C100	109	100		125	125	125	
C125	138	125		144	144	150	
C150	158	150		192	192	200	7
C200	210	200		242	242	250	
				289	289	300	
				295	295	300	8
				355	355	350	
				395	395	400	
				435	435	450	
				460	460	500	
				510	510	500	
				595	595	600	9

(1) For 1336-Series drive constant torque applications, increase the comparable 750-Series drive by at least one rating code.

(2) The 1336 CLASSIC drive does not have a Frame reference; groupings are based on output amps.

Table 19 - 1336 PLUS to PowerFlex 750-Series Drives (480V AC)

1336 PLUS Drive[1]				PowerFlex 750-Series Drives			
Rating Code	Output Amps[2]	Hp	Frame	Rating Code	Output Amps	Hp (ND)	Frame[3]
BRF05	1.2	0.50	A1	2P1	2.1	1	1, 2
BRF07	1.7	0.75					
BRF10	2.3	1.0		3P4	3.4	2	
BRF15	3.0	1.5					
BRF20	4.0	2.0	A2	5P0	5	3	
BRF30	6.0	3.0		8P0	8	5	
BRF50	9.0	5.0	A3	011	11	7.5	
B007	14	7.5	B1	014	14	10	
BRF75	17.5	7.5	A4	022	22	15	2
B010	21	10	B1				
BRF100	25	10	A4	027	27	20	3
B015	27	15	B1	034	34	25	
B020	34	20	B2	040	40	30	
B025	42	25		052	52	40	4
B030	48	30					
BX040	59	40	C	065	65	50	
B040	65	40					
B050	77	50		077	77	60	5
BX060	77	60					
B060	96	60	D	096	96	75	
B075	120	75		125	125	100	6
B100	150	100		156	156	125	
B125	180	125		186	186	150	
BX150	180	150					
B150	240	150	E	248	248	200	
B200	292	200		302	302	250	7
B250	325	250		361	361	300	
BP250	360	250	F	415	415	350	
BX250	360	250	G				
B300	425	300		430	430	350	8
BP300	425	300	F				
B350	475	350	G	485	485	400	
BP350	475	350	F				
B400	525	400	G				

Table 19 - 1336 PLUS to PowerFlex 750-Series Drives (480V AC) (Continued)

1336 PLUS Drive[1]				PowerFlex 750-Series Drives			
Rating Code	Output Amps[2]	Hp	Frame	Rating Code	Output Amps	Hp (ND)	Frame[3]
BP400	532	400	F	545	545	450	8
B450	590	450					
BP450	532	450	G	617	617	500	
B500	670	500		545	545	450	
B600	670	600					
				710	710	600	
				740	740	650	
				800	800	700	9

(1) For 1336-Series drive constant torque applications, increase the comparable 750-Series drive by at least one rating code.
(2) Variable Torque equivalent to normal duty.
(3) Frames 1…5 are IP20; Frames 6 and 7 are IP00; Frame 8: 2500 MCC cabinet 600 mm x 800 mm deep; Frame 9: 2500MCC cabinet 1200 mm x 800 mm deep

Table 20 - 1336 PLUS to PowerFlex 750-Series Drives (600V AC)

1336 PLUS Drive				PowerFlex 750-Series Drives			
Rating Code	Output Amps	Hp	Frame	Rating Code	Output Amps	Hp (ND)	Frame
CWF10	2	1	A4	1P7	1.7	1	3
CWF20	4	2		2P7	2.7	2	
CWF30	6	3		3P9	3.9	3	
CWF50	8	5		6P1	6.1	5	
C007	10	7.5	B1/B2	9	9	7.5	
C010	12	10		11	11	10	
C015	19	15		17	17	15	
C020	24	20		22	22	20	
C025	30	25	C	27	27	25	4
C030	35	30		32	32	30	
C040	45	40		41	41	40	5
C050	57	50		52	52	50	
C060	62	60		63	63	60	6
C075	85	75	D	77	77	75	
C100	109	100		99	99	100	
C125	138	125		125	125	125	
C150 [1]	168	150	E	144	144	150	
C200 [1]	252	200		192	192	200	7
C250	284	250	F	242	242	250	
CX300	300	300	E	289	289	300	

Table 20 - 1336 PLUS to PowerFlex 750-Series Drives (600V AC) (Continued)

1336 PLUS Drive				PowerFlex 750-Series Drives			
Rating Code	**Output Amps**	**Hp**	**Frame**	**Rating Code**	**Output Amps**	**Hp (ND)**	**Frame**
C300	300	300	G	295	295	300	8
C350	350	350		355	355	350	
CP350	350	350					
C400	400	400		435	435	450	
CP400	400	400					
C450 (2)	450	450		460	460	500	
C500 (2)	500	500		510	510	500	
C600	598	600		630	630	700	9
				760	760	800	

(1) The drive must be reprogrammed to 2 kHz to achieve the listed current ratings.

(2) In firmware versions 2.04 and below, the factory default PWM is 4 KHz. The drive must be programmed to 2KHz to achieve current ratings listed.

Table 21 - 1336 PLUS II to PowerFlex 750-Series Drives (480V AC)

1336 PLUS II Drive(1)				PowerFlex 750-Series Drives			
Rating Code	**Output Amps(2)**	**Hp**	**Frame**	**Rating Code**	**Output Amps**	**Hp (ND)**	**Frame(3)**
BRF05	1.2	0.50	A1	2P1	2.1	1	1, 2
BRF07	1.7	0.75					
BRF10	2.3	1.0		3P4	3.4	2	
BRF15	3.0	1.5					
BRF20	4.0	2	A2	5P0	5	3	
BRF30	6.0	3		8P0	8	5	
BRF50	9.0	5	A3	011	11	7.5	
				014	14	10	

Table 21 - 1336 PLUS II to PowerFlex 750-Series Drives (480V AC) (Continued)

1336 PLUS II Drive[1]				PowerFlex 750-Series Drives			
Rating Code	Output Amps[2]	Hp	Frame	Rating Code	Output Amps	Hp (ND)	Frame[3]
BRF75	15.4	7.5	A4	022	22	15	2
BRF100	22	10					
BRF150	24	15		027	27	20	3
BRF200	27	20					
B015	27	15	B1				
B020	34	20	B2	034	34	25	
				040	40	30	
B025	42	25		052	52	40	4
B030	48	30					
BX040	59	40	C	065	65	50	
B040	65	40					
B050	77	50		077	77	60	5
BX060	77	60					
B060	96	60	D	096	96	75	
B075	120	75		125	125	100	6
B100	150	100		156	156	125	
B125	180	125		186	186	150	
BX150	180	150					
B150	240	150	E	248	248	200	
B200	292	200		302	302	250	7
B250	325	250		361	361	300	
BP/BPR250	360	250	F	415	415	350	
BX250	360	250	G				
B300	425	300		430	430	350	8
BP/BPR300	425	300	F				
B350	475	350	G	485	485	400	
BP/BPR350	475	350	F				
B400	525	400	G	545	545	450	8
BP/BPR400	532	400	F				
BP/BPR450	532	450					
B450	590	450	G	617	617	500	
B500	670	500		740	740	650	
B600	670	600					

(1) For 1336-Series drive constant torque applications, increase the comparable 750-Series drive by at least one rating code.
(2) Variable Torque equivalent to normal duty.
(3) Frames 1…5 are IP20; Frames 6 and 7 are IP00; Frame 8: 2500 MCC cabinet 600 mm x 800 mm deep.

Table 22 - 1336 PLUS II to PowerFlex 750-Series Drives (600V AC)

1336 PLUS II Drive[1]				PowerFlex 750-Series Drives			
Rating Code	Output Amps[2]	Hp	Frame	Rating Code	Output Amps	Hp	Frame[3]
CWF10	2	1	A4	1P7	1.7	1	3
CWF20	4	2		2P7	2.7	2	
CWF30	6	3		3P9	3.9	3	
CWF50	8	5		6P1	6.1	5	
CWF75	10	7.5		9	9	7.5	
CWF100	12	10		11	11	10	
CWF150	19	15		17	17	15	
CWF200	24	20		22	22	20	
C025	30	25	C	27	27	25	4
C030	35	30		32	32	30	
C040	45	40		41	41	40	5
C050	57	50		52	52	50	
C060	62	60		63	63	60	6
C075	85	75	D	77	77	75	
C100	109	100		99	99	100	
C125	138	125		125	125	125	
C150	168	150	E	144	144	150	
C200	252	200		192	192	200	7
C250	284	250		242	242	250	
CX300	298	300		289	289	300	
C300	300	300	F	295	295	300	8
C350	350	350	G	355	355	350	
CP/CPR350	350	350	F				
C400	400	400	G	395	395	400	
CP/CPR400	400	400	F				
C450	450	450	G	435	435	450	
C500	500	500		460	460	500	
				510	510	500	
C600	600	600		630	630	700	9
				760	760	800	

(1) For 1336-Series drive constant torque applications, increase the comparable 750-Series drive by at least one rating code.

(2) Variable Torque equivalent to normal duty.

(3) Frames 1…5 are IP20; Frames 6 and 7 are IP00; Frame 8: 2500 MCC cabinet 600 mm x 800 mm deep; Frame 9: 1200 mm x 800 mm deep.

Table 23 - 1336 FORCE to PowerFlex 750-Series Drives (480V AC)

1336 FORCE Drive[1]				PowerFlex 750-Series Drives			
Rating Code	**Output Amps**	**Hp**	**Frame**	**Rating Code**	**Output Amps**	**Hp (ND)**	**Frame[3]**
				2P1	2.1	1	1, 2
B001	2.5	1	B1	3P4	3.4	2	
				5P0	5	3	
B003	6.0	3		8P0	8	5	
				011	11	7.5	
B007	13.9	7.5		014	14	10	
B010	20.9	10		022	22	15	2
				027	27	20	3
B015	27.2	15		034	34	25	
B020	33.7	20	B2	040	40	30	
B025	41.8	25		052	52	40	4
B030	48.2	30					
BX040	58.7	40	C	065	65	50	
B040	64.5	40		077	77	60	5
B050	78.2	50		096	96	75	
BX060	78.2	60					
B060	96.9	60	D	125	125	100	6
B075	120.3	75					
B100	149.2	100		156	156	125	
B125	180.4	125		186	186	150	
BX150	180.4	150					
B150	240.0	150	E	248	248	200	
B200	291.4	200		302	302	250	7
B250	327.4	250		361	361	300	
BP250	353.6	250	F				
BX250	353.6	250	G				
B300	406.4	300		415	415	350	
BP300	406.4	300	F	430	430	350	8
BP350	459.2	350		485	485	400	
B350	459.2	350	G				
BP400	481.0	400	F				
B400	505.1	400	G	545	545	450	
BP450	531.7	450	F				
B450	570.2	450	G	617	617	500	
B500	599.2	500					
B600	673.4	600		740	740	650	

Table 23 - 1336 FORCE to PowerFlex 750-Series Drives (480V AC) (Continued)

1336 FORCE Drive[1]				PowerFlex 750-Series Drives			
Rating Code	**Output Amps**	**Hp**	**Frame**	**Rating Code**	**Output Amps**	**Hp (ND)**	**Frame[3]**
B700C	850.0	700	H	960	960	800	9
12B700C [2]	850.0	700					
B800C	983.0	800		1K0	1045	900	
12B800C [2]	983.0	800					

(1) For 1336-Series drive constant torque applications, increase the comparable 750-Series drive by at least one rating code.
(2) The 750-Series drives do not have a comparison due to the 12-pulse input configuration.
(3) Frames 1…5 drives are IP20; Frames 6 and 7 drives are IP00; Frame 8: 2500 MCC cabinet 600 mm x 800 mm deep: Frame 9: 2500 MCC cabinet 1200 mm x 800 mm deep.

Table 24 - 1336 FORCE to PowerFlex 750-Series Drives 600V AC)

1336 Force Drive				PowerFlex 750-Series Drives			
Rating Code	**Output Amps**	**Hp**	**Frame**	**Rating Code**	**Output Amps**	**Hp**	**Frame**
C001	2.5	1	B1	1P7	1.7	1	3
				2P7	2.7	2	
				3P9	3.9	3	
C003	6	3		6P1	6.1	5	
				9	9	7.5	
C007	9.9	7.5		11	11	10	
C010	12	10		17	17	15	
				22	22	20	
C015	18.9	15		27	27	25	4
C020	23.6	20	B2	32	32	30	
C025	30	25	C	41	41	40	5
C030	34.6	30		41	41	40	
C040	45.1	40		52	52	50	
				63	63	60	6
C050	57.2	50		77	77	75	
C060	61.6	60		99	99	100	
C075	85.8	75	D	99	99	100	
C100	109.1	100		125	125	125	
C125	138.6	125		144	144	150	

1336 Force Drive				PowerFlex 750-Series Drives			
Rating Code	**Output Amps**	**Hp**	**Frame**	**Rating Code**	**Output Amps**	**Hp**	**Frame**
C150	159.7	150	E	192	192	200	7
				242	242	250	
C200	252.5	200		289	289	300	
C250	283.6	250	G	289	289	300	
				295	295	300	8
C300	298	300		355	355	350	
C350	353.6	350		355	355	350	
C400	406.4	400		435	435	450	
C450	459.2	450		460	460	500	
C500	505.1	500		510	510	500	
				595	595	600	9
C600	599.2	600		630	630	700	
C650	673.4	650		760	760	800	
C700	770	700	H	825	825	900	
C800	800	800					
12C700C (1)	770	700					
12C800C (1)	800	800					

(1) The 750-Series drives do not have a comparison due to the 12-pulse input configuration.

Table 25 - 1336 IMPACT to PowerFlex 750-Series Drives (480V AC)

1336 IMPACT Drive[1]				PowerFlex 750-Series Drives			
Rating Code	**Output Amps**	**Hp**	**Frame**	**Rating Code**	**Output Amps**	**Hp (ND)**	**Frame[3]**
BRF05	1.2	0.50	A1	2P1	2.1	1	1, 2
BRF07	1.7	0.75					
BRF10	2.3	1.0		3P4	3.4	2	
BRF15	3.0	1.5					
BRF20	4.0	2.0	A2	5P0	5	3	
BRF30	6.0	3.0		8P0	8	5	
BRF50	10.4	5.0	A3	011	11	7.5	
BRF75	13.9	7.5	A4	014	14	10	
				022	22	15	2
BRF100	24.0	10		027	27	20	3
B015	27.2	15	B1	034	34	25	
B020	33.7	20	B2	040	40	30	
B025	41.8	25		052	52	40	4
B030	48.2	30					
BX040	58.7	40	C	065	65	50	
B040	64.5	40		077	77	60	5
B050	78.2	50		096	96	75	
BX060	78.2	60					
B060	96.9	60	D	125	125	100	6
B075	120.3	75					
B100	149.2	100		156	156	125	
B125	180.4	125		186	186	150	
BX150	180.4	150					
B150	240.0	150	E	248	248	200	
B200	291.4	200		302	302	250	7
B250	327.4	250		361	361	300	
B300	406.4	300	F	415	415	350	
BP300	406.4	300		430	430	350	8
BPR300	406.4	300					
B350	459.2	350	G	485	485	400	
BP350	459.2	350	F				
BPR350	459.2	350					

Table 25 - 1336 IMPACT to PowerFlex 750-Series Drives (480V AC) (Continued)

1336 IMPACT Drive[1]				PowerFlex 750-Series Drives			
Rating Code	**Output Amps**	**Hp**	**Frame**	**Rating Code**	**Output Amps**	**Hp (ND)**	**Frame[3]**
BP400	481.0	400	F	545	545	450	8
BPR400	481.0	400					
B400	505.1	400	G				
BP450	531.7	450	F				
BPR450	531.7	450					
B450	570.2	450	G	617	617	500	
B500	599.2	500					
B600	673.4	600		740	740	650	
B700C	850.0	700	H	960	960	800	9
12B700C [2]	850.0	700					
B800C	983.0	800		1K0	1045	900	
12B800C [2]	983.0	800					

(1) For 1336-Series drive constant torque applications, increase the comparable 750-Series drive by at least one rating code.

(2) The 750-Series drives do not have a comparison due to the 12-pulse input configuration.

(3) Frames 2…5 drives are IP20; Frame 6 and Frame 7 drives are IP00. Frame 8: 2500 MCC cabinet 600mm/800mm deep. Frame 9: 2500 MCC cabinet 1200 mm x 800 mm deep.

Table 26 - 1336 IMPACT to PowerFlex 750-Series Drives (600V AC)

1336 IMPACT Drive				PowerFlex 750-Series Drives			
Rating Code	**Output Amps**	**Hp**	**Frame**	**Rating Code**	**Output Amps**	**Hp**	**Frame**
CWF10	2.5	1	A4	1P7	1.7	1	3
				2P7	2.7	2	
				3P9	3.9	3	
CWF20	4.2	2		6P1	6.1	5	
CWF30	6	3		6P1	6.1	5	
CWF5	7.9	5		9	9	7.5	
CWF75	9.9	7.5		11	11	10	
CWF100	12	10		17	17	15	
C015	18.9	15	B	22	22	20	
C020	23.6	20		27	27	25	4
C025	30	25	C	32	32	30	
C030	34.6	30		41	41	40	5
C040	45.1	40		52	52	50	
C050	57.2	50		63	63	60	6
C060	61.6	60		77	77	75	
C075	85.8	75	D	99	99	100	
C100	109.1	100		125	125	125	
C125	139.6	125		144	144	150	

Table 26 - 1336 IMPACT to PowerFlex 750-Series Drives (600V AC) (Continued)

1336 IMPACT Drive				PowerFlex 750-Series Drives			
Rating Code	**Output Amps**	**Hp**	**Frame**	**Rating Code**	**Output Amps**	**Hp**	**Frame**
C150	159.7	150	E	192	192	200	7
				242	242	250	
C200	252.6	200		289	289	300	
C250	283.6	250		289	289	300	
				295	295	300	8
C300	298	300	G	355	355	350	
CX300	298	300	E	355	355	350	
C350	353.6	350	G	355	355	350	
CP350	350	350	F	355	355	350	
CPR350	350	350	F	355	355	350	
				395	395	400	
C400	406.4	400	G	435	435	450	
CP400	400	400	F	435	435	450	
CPR400	400	400	F	435	435	450	
C450	459.6	450	G	460	460	500	8
C500	505.1	500		510	510	500	
				595	595	600	9
C600	599.2	600		630	630	700	
C650	673.4	650		760	760	800	
C700C	770	700		825	825	900	
C800C	800	800		825	825	900	
12C700C (1)	770	700	H				
12C800C (1)	800	800					

(1) The 750-Series drives do not have a comparison due to the 12-pulse input configuration.

Fuse and Circuit Breaker Ratings

The tables on the following pages provide recommended AC line input fuse and circuit breaker information. See Fusing and Circuit Breakers on the next page for UL and IEC requirements. Sizes listed are the recommended sizes based on 40 °C (104 °F) and the U.S. NEC. Other country, state, or local codes can require different ratings. DC link fuse recommendations for DC input drives are also provided. In addition, Frame 8 and larger drives include AC line fuses (with blown fuse indicators) to provide drive short circuit protection.

Input Device Requirements

Frames	Enclosure Catalog Code	Enclosure Type	Installation Type	UL Certification Required	UL Certification Not Required
1	R	IP20 NEMA/UL Open Type	Installed in a non-ventilated cabinet.	All devices listed on pages 51 and 55 are acceptable.	All devices listed on pages 51 through 61 are acceptable.
			Installed outside of cabinet using NEMA Type 1 kit or in a ventilated cabinet.	Only non-time delay fuses listed on pages 51 and 55, excluding maximum value, are acceptable.	
2…5	N	IP20 NEMA/UL Open Type	Installed in a non-ventilated cabinet. Heat sink is inside or outside of cabinet.	All devices listed on pages 51, 55, and 59 are acceptable.	
	F	Flange			
	N	IP20 NEMA/UL Open Type	Installed outside of cabinet using NEMA Type 1 kit or in a ventilated cabinet.	400V AC/540V DC or 480V AC/650V DC drives: Only non-time delay fuses listed on pages 51 and 55, excluding maximum value, are acceptable. 600V AC/810V DC drives: Only non-time delay fuses listed on page 59 are acceptable, with maximum value of 40A (Frame 3), 60A (Frame 4), and 100A (Frame 5).	
	F	Flange			
	G	IP54 NEMA/UL Type 12	Installed inside or outside of any cabinet.	All devices listed on pages 51, 55, and 59 are acceptable.	
6 and 7	N	IP00 NEMA/UL Open Type	Installed in any cabinet. Heat sink is inside or outside of cabinet.	400V AC/540V DC or 480V AC/650V DC drives: All devices listed on pages 51, 55, and 59 are acceptable. 600V AC/810V DC or 690V AC/932V DC drives: Only time delay and non-time delay fuses listed on page 59 are acceptable.	
			Installed outside of cabinet using NEMA Type 1 kit.		
	G	IP54 NEMA/UL Type 12	Installed inside or outside of any cabinet.	All devices listed on pages 51, 55, and 59 are acceptable.	
8 and 9	B, L, P, W	IP20 NEMA/UL Type 1	Installed inside of any cabinet.	All devices listed on pages 53, 57, and 61 are acceptable.	
	J, K, Y	IP54 NEMA 12	Installed inside or outside of any cabinet.	All devices listed on pages 53, 57, and 61 are acceptable.	

Fusing

The recommended fuse types are listed below. If available current ratings do not match those listed in the tables provided, choose the next higher fuse rating.

- IEC – BS88 (British Standard) Parts 1 & 2, EN60269-1, Parts 1 & 2[(1)], type gG or equivalent should be used.
- UL – UL Class CC, T, RK1, J, or L should be used.

Circuit Breakers

The “non-fuse” listings in the following tables include inverse time circuit breakers, instantaneous trip circuit breakers (motor circuit protectors) and 140M self-protected combination motor controllers. If one of these is chosen as the desired protection method, the following requirements apply:

- IEC – Both types of circuit breakers and 140M self-protected combination motor controllers are acceptable for IEC installations.
- UL - Only inverse time circuit breakers and the specified 140M self-protected combination motor controllers are acceptable for UL installations.

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

400 Volt AC and 540 Volt DC Input Protection Devices - Wall Mount Frames 1…7

Applied Rating (1)	Frame (2)	Cont. Output Amps	Drive Sized For Normal Duty			Drive Sized For Heavy Duty			Input Quantities		AC Input Protection Devices										Input Quantities	DC Input Protection (10)
			Catalog Number	Output Overload Amps		Catalog Number	Output Overload Amps		Continuous AC Input		Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker Max Size (5)	Motor Circuit Protector (6)	140M Type E Combination Motor Controller with Adjustable Current Range (7) (8)				Continuous DC Input	
			(x = F or G)	1 min	3 sec	(x = F or G)	1 min	3 sec	kVA	Amps	Min (3)	Max (4)	Min (3)	Max (4)			Cat. No.			Min Enclosure Volume (in.^{3}) (9)	Amps	Non-Time Delay Fuse
400 Volt AC Input																					**540 Volt DC Input**	
0.75 kW	1	2.1	20x…C2P1	2.3	3.2	20x…C2P1	2.3	3.2	1.2	1.7	2	3	2	3	15	3	M-C2E-B25	M-D8E-B25		7269	2.1	JKS-6
1.5 kW	1	3.5	20x…C3P5	3.9	5.3	20x…C3P5	3.9	5.3	1.9	2.8	6	6	6	6	15	7	M-C2E-B40	M-D8E-B40		7269	3.7	JKS-8
2.2 kW	1	5	20x…C5P0	5.5	7.5	20x…C5P0	5.5	7.5	3.1	4.5	6	6	6	6	20	7	M-C2E-B63	M-D8E-B63		7269	5.3	JKS-10
4.0 kW	1	8.7	20x…C8P7	9.6	13.1	20x…C8P7	9.6	13.1	5.4	7.8	10	15	10	15	30	15	M-C2E-C10	M-D8E-C10	M-F8E-C10	7269	9.3	HSJ15
5.5 kW	1	11.5	20x…C011	12.7	17.3	20x…C011	13.1	17.3	7.4	10.7	15	20	15	20	45	15	M-C2E-C16	M-D8E-C16	M-F8E-C16	7269	12.6	HSJ20
7.5 kW	1	15.4	20x…C015	16.9	23.1	20x…C022	17.3	23.1	10.1	14.6	20	25	20	25	60	20	M-C2E-C20	M-D8E-C20	M-F8E-C20	7269	17.0	HSJ25
0.75 kW	2	2.1	20x…C2P1	3.1	3.7	20x…C2P1	3.1	3.7	1.2	1.7	3	6	3	8	15	3	M-C2E-B25	M-D8E-B25		9086	2.1	JKS-6
1.5 kW	2	3.5	20x…C3P5	5.2	6.3	20x…C3P5	5.2	6.3	1.9	2.8	6	7	6	12	15	7	M-C2E-B40	M-D8E-B40		9086	3.7	JKS-8
2.2 kW	2	5	20x…C5P0	7.5	9.0	20x…C5P0	7.5	9.0	3.1	4.5	6	10	6	20	20	7	M-C2E-B63	M-D8E-B63		9086	5.3	JKS-10
4.0 kW	2	8.7	20x…C8P7	13.0	15.6	20x…C8P7	13.0	15.6	5.4	7.8	10	17.5	10	30	30	15	M-C2E-C10	M-D8E-C10	M-F8E-C10	9086	9.3	HSJ15
5.5 kW	2	11.5	20x…C011	17.2	20.7	20x…C011	17.2	20.7	7.4	10.7	15	25	15	45	45	15	M-C2E-C16	M-D8E-C16	M-F8E-C16	9086	12.6	HSJ20
7.5 kW	2	15.4	20x…C015	16.9	23.1	20x…C022	24.2	33.0	10.1	14.6	20	30	20	60	60	20	M-C2E-C20	M-D8E-C20	M-F8E-C20	9086	17.0	HSJ25
11 kW	2	22	20x…C022	24.2	33.0	20x…C030	33.0	45.0	14.6	21.1	30	45	30	80	80	30		M-D8E-C25	M-F8E-C25	9086	24.6	HSJ40
15 kW	3	30	20x…C030	33.0	45.0	20x…C037	45.0	55.5	19.9	28.7	40	60	40	120	100	50			M-F8E-C32	9086	33.6	HSJ50
18.5 kW	3	37	20x…C037	40.7	55.5	20x…C043	55.5	66.6	24.5	35.4	45	80	45	125	110	50			M-F8E-C45	9086	41.4	HSJ70
22 kW	3	43	20x…C043	47.3	64.5	20x…C060	66.0	90.0	28.5	41.2	55	90	55	150	120	60					48.1	HSJ90
30 kW	4	60	20x…C060	66.0	90.0	20x…C072	90.0	108.0	39.8	57.4	75	125	75	225	180	100					67.1	HSJ100
37 kW	4	72	20x…C072	79.2	108.0	20x…C085	108.0	129.6	48.9	70.5	90	150	90	275	200	100					82.4	HSJ125
45 kW	5	85	20x…C085	93.5	127.5	20x…C104	127.5	156.0	57.7	83.3	110	175	110	325	250	150					97.3	HSJ150
55 kW	5	104	20x…C104	114.4	156.0	20x…C140	156.0	210.0	71.3	102.9	130	225	130	400	300	150					120.2	HSJ175
75 kW	6	140	20x…C140	154.0	210.0	20x…C170	210.0	255.0	95.0	137.2	175	300	175	550	400	250					160.3	HSJ250
90 kW	6	170	20x…C170	187.0	255.0	20x…C205	255.0	307.5	115.4	166.5	225	375	225	600	500	250					194.6	HSJ350
110 kW	6	205	20x…C205	225.5	307.5	20x…C260	307.5	390.0	139.1	200.8	275	450	275	600	600	400					234.7	HSJ350
132 kW	6	260	20x…C260	286.0	390.0	20x…C302	390.0	468.0	176.5	254.7	325	575	325	750	700	400					297.7	HSJ400
160 kW	7	302	20x…C302	332.2	453.0	20x…C367	453.0	550.5	205.0	295.9	400	675	400	900	900	600					345.7	Bussman 170M6608
200 kW	7	367	20x…C367	403.7	550.5	20x…C456	550.5	684.0	249.1	359.5	475	800	475	1000	1100	600					420.2	Bussman 170M6612
250 kW	7	456	20x…C456	501.6	684.0				309.5	446.7	600	1000	600	1800	1300	600					522.0	Bussman 170M6613

See page 52 for notes.

(1) "Applied Rating" refers to the motor that will be connected to the drive. For example, a "C022" drive can be used in Normal Duty mode on a 11 kW motor, or in Heavy Duty mode on a 7.5 kW motor. A "C015" drive can be used in Heavy Duty mode on a 5.5 kW motor with the same ratings as a "C011." The drive can be programmed for either mode. Wiring and fuses can be sized based on the programmed mode. For any given drive catalog number, Normal Duty mode provides higher continuous current but smaller overload current with respect to Heavy Duty mode. See parameter 306 [Duty Rating].
(2) Enclosure codes F, N, and R only. See Frame/Rating Cross-Reference in PowerFlex 750-Series AC Drives Technical Data, publication 750-TD001, for frame sizes of other enclosure types.
(3) Minimum protection device size is the lowest rated device that supplies maximum protection without nuisance tripping.
(4) 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.
(5) Circuit Breaker - inverse time breaker. For US NEC, minimum size is 125% of motor FLA. Ratings shown are maximum.
(6) Recommended Motor circuit protector - Instantaneous trip circuit breaker. The trip setting should be set to the input current of the drive and should be sized for the continuous current of the system.
(7) Bulletin 140M with adjustable current range should have the current trip set to the minimum range that the device will not trip.
(8) Manual Self-Protected (Type E) Combination Motor Controller, UL listed for 480Y/277V and 600Y/347V AC Input. Not UL listed for use on 480V or 600V Delta/Delta, corner ground, or high-resistance ground systems.
(9) When using a Manual Self-Protected (Type E) Combination Motor Controller, the drive must be installed in a ventilated or non-ventilated enclosure with the minimum volume specified in this column. Application specific thermal considerations may require a larger enclosure.
(10) See Fuse Certification and Test Data in PowerFlex AC Drives in Common Bus Configurations Application Guidelines, publication DRIVES-AT002, for fuse self-certification and test data for Bussmann 170M and JKS fuses recommended for the DC bus fusing.

400 Volt AC and 540 Volt DC Input Protection Devices - Floor Mount Frames 8 and 9

Applied Rating [1]	Frame	Cont. Output Amps	Duty	Catalog Number	Output Overload Amps		Continuous AC Input	AC Input Integral Semiconductor Fuse Size (170M) [2]	DC Bay to Bay Integral Semiconductor Fuse Size (170M)	AC Input Protection Devices Recommended for Branch Circuit Protection (Does not apply to 21G Drives with Options)								Input Quantities	DC Input Integral Semiconductor Fuse Size (170M) [8]
										Dual Element Time Delay Fuse			Non-Time Delay Fuse			Circuit Breaker Max Size [6]	Motor Circuit Protector [7]	Continuous DC Input	
					1 min	3 sec				1/Phase Min [4]	2/Phase Min [4]	Max [5]	1/Phase Min [4]	2/Phase Min [4]	Max [5]				
400V AC Input																		**540V DC Input**	
							Amps	Amps	Amps									Amps	Amps
200 kW	8	385	Heavy	20G…C460	578	693	380	1100	–	500	–	850	500	–	1100	1100	500	443	1600
250 kW	8	460	Normal	20G…C460	506	693	455	1100	–	600	–	1000	600	–	1300	1300	600	529	1600
		456	Heavy	20G…C540	684	821	450	1100	–	600	–	1000	600	–	1300	1300	600	525	1600
		472	Heavy	20G…C567	708	851	466	1100	–	600	–	1000	600	–	1400	1400	600	543	1600
315 kW	8	540	Light	20G…C460	594	–	534	1100	–	700	350	1200	700	350	1600	1600	700	621	1600
		540	Normal	20G…C540	594	821	533	1100	–	700	350	1200	700	350	1600	1600	700	621	1600
		540	Heavy	20G…C650	810	975	533	1100	–	700	–	1200	700	–	1600	1600	700	621	1600
315 kW	8	585	Light	20G…C540	644	–	578	1100	–	750	375	1300	750	375	1700	1700	800	673	1600
		567	Normal	20G…C567	624	851	560	1100	–	750	375	1200	750	375	1700	1700	700	652	1600
		585	Heavy	20G…C750	878	1125	577	1100	–	750	375	1300	750	375	1700	1700	800	673	1600
355 kW	8	612	Light	20G…C567	673	–	604	1100	–	800	400	1300	800	400	1800	1800	800	704	1600
		650	Normal	20G…C650	715	975	640	1100	–	850	425	1400	850	425	1900	1900	800	748	1600
		642	Heavy	20G…C770	963	1155	634	1100	–	800	400	1400	800	400	1900	1900	800	739	1600
400 kW	8	750	Light	20G…C650	825	–	739	1100	–	1000	500	1600	1000	500	2200	2200	1000	863	1600
		750	Normal	20G…C750	825	1125	739	1100	–	1000	500	1600	1000	500	2200	2200	1000	863	1600
		770	Normal	20G…C770	847	1155	758	1100	–	1000	500	1700	1000	500	2300	2300	1000	886	1600
450 kW	8	796	Light	20G…C750	876	–	784	1100	–	1000	500	1700	1000	500	2300	2300	1000	916	1600
		832	Light	20G…C770	915	–	819	1100	–	1100	550	1800	1100	550	2400	2400	1200	957	1600
400 kW	9	750	Heavy	20G…C910	1125	1365	739	1100	1400 [3]	900	450	1700	900	450	2200	2200	900	863	1600 [3]
500 kW	9	880	Heavy	20G…C1K0	1320	1584	867	1100	1400 [3]	1100	550	2000	1100	550	2600	2600	1100	1013	1600 [3]
		910	Heavy	20G…C1K1	1365	1638	896	1100	1400 [3]	1100	550	2000	1100	550	2700	2700	1100	1047	1600 [3]
		910	Normal	20G…C910	1001	1365	896	1100	1400 [3]	1100	550	2000	1100	550	2700	2700	1100	1047	1600 [3]
560 kW	9	1040	Light	20G…C910	1144	–	1024	1100	1400 [3]	1300	650	2300	1300	650	3100	3100	1300	1197	1600 [3]
		1040	Normal	20G…C1K0	1144	1584	1024	1100	1400 [3]	1300	650	2300	1300	650	3100	3100	1300	1197	1600 [3]
		1040	Heavy	20G…C1K2	1560	1872	1024	1100	1400 [3]	1300	650	2300	1300	650	3100	3100	1300	1197	1600 [3]
630 kW	9	1090	Light	20G…C1K0	1199	–	1073	1100	1400 [3]	1350	675	2400	1350	675	3200	3200	1350	1254	1600 [3]
		1090	Normal	20G…C1K1	1199	1638	1073	1100	1400 [3]	1350	675	2400	1350	675	3200	3200	1350	1254	1600 [3]
		1090	Heavy	20G…C1K4	1635	2198	1073	1100	1400 [3]	1350	675	2400	1350	675	3200	3200	1350	1254	1600 [3]

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Applied Rating (1)	Frame	Cont. Output Amps	Duty	Catalog Number	Output Overload Amps		Continuous AC Input	AC Input Integral Semiconductor Fuse Size (170M) (2)	DC Bay to Bay Integral Semiconductor Fuse Size (170M)	AC Input Protection Devices Recommended for Branch Circuit Protection (Does not apply to 21G Drives with Options)								Input Quantities	DC Input Integral Semiconductor Fuse Size (170M) (8)
										Dual Element Time Delay Fuse			Non-Time Delay Fuse			Circuit Breaker Max Size (6)	Motor Circuit Protector (7)	Continuous DC Input	
					1 min	3 sec	Amps	Amps	Amps	1/Phase Min (4)	2/Phase Min (4)	Max (5)	1/Phase Min (4)	2/Phase Min (4)	Max (5)			Amps	Amps
400V AC Input (continued)																		**540V DC Input (continued)**	
710 kW	9	1175	Light	20G…C1K1	1293	–	1157	1100	1400 (3)	1450	725	2600	1450	725	3500	3500	1450	1352	1600 (3)
		1175	Normal	20G…C1K2	1293	1872	1157	1100	1400 (3)	1450	725	2600	1450	725	3500	3500	1450	1352	1600 (3)
		1175	Heavy	20G…C1K5	1763	2220	1157	1100	1400 (3)	1450	725	2600	1450	725	3500	3500	1450	1352	1600 (3)
	10	1325	Heavy	20G…C1K6	1988	2385	1305	1100	1400 (3)	1650	825	2900	1650	825	3900	3900	1650	1525	1600 (3)
800 kW	9	1465	Light	20G…C1K2	1612	–	1443	1100	1400 (3)	1800	900	3200	1800	900	4300	4300	1800	1686	1600 (3)
		1465	Normal	20G…C1K4	1612	2198	1443	1100	1400 (3)	1800	900	3200	1800	900	4300	4300	1800	1686	1600 (3)
850 kW	9	1480	Light	20G…C1K4	1628	–	1457	1100	1400 (3)	1800	900	3300	1800	900	4400	4400	1800	1703	1600 (3)
		1480	Normal	20G…C1K5	1628	2220	1457	1100	1400 (3)	1800	900	3300	1800	900	4400	4400	1800	1703	1600 (3)
900 kW	9	1600	Light	20G…C1K5	1760	–	1576	1100	1400 (3)	1950	975	3500	1950	975	4700	4700	1950	1841	1600 (3)

(1) "Applied Rating" refers to the motor that will be connected to the drive. For example, a "C460" drive can be used in Normal Duty mode on a 250 kW motor, in Heavy Duty mode on a 200 kW motor or in Light Duty mode on a 315 kW motor. The drive can be programmed for each mode. Wiring and fuses can be sized based on the programmed mode. For any given drive catalog number, Normal Duty mode provides higher continuous current but smaller overload current with respect to Heavy Duty mode. See parameter 306 [Duty Rating]. Refer to Specifications for an explanation of Duty Ratings.

(2) These AC line fuses (with blown fuse indicators) are included in the drive to provide drive short circuit protection. AC input protection devices for branch circuit protection based on US NEC are listed in the table. Each drive bay has one fuse per phase.

(3) Each drive bay has one fuse per DC line.

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

(5) 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.

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

(7) Recommended Motor circuit protector - Instantaneous trip circuit breaker. The trip setting should be set to the input current of the drive and should be sized for the continuous current of the system.

(8) These DC line fuses (with blown fuse indicators) are included in the drive to provide drive short circuit protection.

480 Volt AC and 650 Volt DC Input Protection Devices - Wall Mount Frames 1…7

Applied Rating (1)	Frame (2)	Cont. Output Amps	Drive Sized For Normal Duty			Drive Sized For Heavy Duty			Input Quantities		AC Input Protection Devices									Input Quantities	DC Input Protection (10)
			Catalog Number	Output Overload Amps		Catalog Number	Output Overload Amps		Continuous AC Input		Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker Max Size (5)	Motor Circuit Protector (6)	140M Type E Combination Motor Controller with Adjustable Current Range (7) (8)			Continuous DC Input	
			(x = F or G)	1 min	3 sec	(x = F or G)	1 min	3 sec	kVA	Amps	Min (3)	Max (4)	Min (3)	Max (4)			Cat. No.		Min Enclosure Volume (in.^{3}) (9)	Amps	Non-Time Delay Fuse
480 Volt AC Input																				**650 Volt DC Input**	
1.0 Hp	1	2.1	20x…D2P1	2.3	3.2	20x…D2P1	2.3	3.2	1.3	1.6	2	3	2	3	15	3	M-C2E-B25	M-D8E-B25		7269	1.9	JKS-6
2.0 Hp	1	3.4	20x…D3P4	3.7	5.1	20x…D3P4	3.7	5.1	2.2	2.6	6	6	6	6	15	7	M-C2E-B40	M-D8E-B40		7269	3.0	JKS-6
3.0 Hp	1	5	20x…D5P0	5.5	7.5	20x…D5P0	5.5	7.5	3.2	3.9	6	6	6	6	20	7	M-C2E-B63	M-D8E-B63		7269	4.5	JKS-10
5.0 Hp	1	8	20x…D8P0	8.8	12.0	20x…D8P0	8.8	12.0	5.7	6.9	10	15	10	15	30	15	M-C2E-C10	M-D8E-C10	M-F8E-C10	7269	8.1	HSJ15
7.5 Hp	1	11	20x…D011	12.1	16.5	20x…D011	12.1	16.5	7.9	9.5	15	20	15	20	40	15	M-C2E-C16	M-D8E-C16	M-F8E-C16	7269	11.1	HSJ20
10 Hp	1	14	20x…D014	15.4	21.0	20x…D022	16.5	21.0	10.4	12.5	20	25	20	25	50	20	M-C2E-C16	M-D8E-C16	M-F8E-C16	7269	14.7	HSJ30
1.0 Hp	2	2.1	20x…D2P1	3.1	3.7	20x…D2P1	3.1	3.7	1.3	1.6	2	6	2	8	15	3	M-C2E-B25	M-D8E-B25		9086	1.9	JKS-6
2.0 Hp	2	3.4	20x…D3P4	5.1	6.1	20x…D3P4	5.1	6.1	2.2	2.6	4	7	4	12	15	7	M-C2E-B40	M-D8E-B40		9086	3.0	JKS-6
3.0 Hp	2	5	20x…D5P0	7.5	9.0	20x…D5P0	7.5	9.0	3.2	3.9	6	10	6	20	20	7	M-C2E-B63	M-D8E-B63		9086	4.5	JKS-10
5.0 Hp	2	8	20x…D8P0	12.0	14.4	20x…D8P0	12.0	14.4	5.7	6.9	10	17.5	10	30	30	15	M-C2E-C10	M-D8E-C10	M-F8E-C10	9086	8.1	HSJ15
7.5 Hp	2	11	20x…D011	16.5	19.8	20x…D011	16.5	19.8	7.9	9.5	12	20	12	40	40	15	M-C2E-C16	M-D8E-C16	M-F8E-C16	9086	11.1	HSJ20
10 Hp	2	14	20x…D014	15.4	21.0	20x…D022	24.2	33.0	10.4	12.5	20	30	20	55	50	20	M-C2E-C16	M-D8E-C16	M-F8E-C16	9086	14.7	HSJ30
15 Hp	2	22	20x…D022	24.2	33.0	20x…D027	33.0	40.5	16.6	19.9	30	50	30	80	80	30		M-D8E-C25	M-F8E-C25	9086	23.3	HSJ40
20 Hp	3	27	20x…D027	29.7	40.5	20x…D034	40.5	51.0	20.6	24.8	35	60	35	100	100	50			M-F8E-C32	9086	28.9	HSJ50
25 Hp	3	34	20x…D034	37.4	51.0	20x…D040	51.0	61.2	25.9	31.2	45	75	45	125	100	50			M-F8E-C45	9086	36.4	HSJ60
30 Hp	3	40	20x…D040	44.0	60.0	20x…D052	60.0	78.0	30.5	36.7	50	90	50	150	120	50			M-F8E-C45	9086	42.9	HSJ80
40 Hp	4	52	20x…D052	57.2	78.0	20x…D065	78.0	97.5	39.7	47.7	65	110	65	200	150	70					55.7	HSJ90
50 Hp	4	65	20x…D065	71.5	97.5	20x…D077	97.5	117.0	49.6	59.6	90	125	90	250	175	100					69.7	HSJ100
60 Hp	5	77	20x…D077	84.7	115.5	20x…D096	115.5	144.0	60.1	72.3	100	170	100	300	225	100					84.5	HSJ150
75 Hp	5	96	20x…D096	105.6	144.0	20x…D125	144.0	187.5	74.9	90.1	125	200	125	375	275	125					105.3	HSJ175
100 Hp	6	125	20x…D125	137.5	187.5	20x…D156	187.5	234.0	97.6	117.4	175	275	175	500	375	250					137.1	HSJ200
125 Hp	6	156	20x…D156	171.6	234.0	20x…D186	234.0	280.8	121.8	146.5	200	350	200	600	450	250					171.2	HSJ300
150 Hp	6	186	20x…D186	204.6	279.0	20x…D248	279.0	372.0	145.2	174.6	250	400	250	600	550	250					204.1	HSJ400
200 Hp	6	248	20x…D248	272.8	372.0	20x…D302	372.0	453.0	193.6	232.8	325	550	325	700	700	400					272.1	HSJ400
250 Hp	7	302	20x…D302	332.2	453.0	20x…D361	453.0	543.6	235.7	283.5	400	675	400	900	900	600					331.3	Bussman 170M6608
300 Hp	7	361	20x…D361	397.1	541.5	20x…D415	541.5	649.8	281.8	338.9	475	800	475	1000	1000	600					396.1	Bussman 170M6612
350 Hp	7	415	20x…D415	456.5	622.5				323.9	389.6	525	900	525	1200	1200	600					455.3	Bussman 170M6612

See page 56 for notes.

(1) "Applied Rating" refers to the motor that will be connected to the drive. For example, a "D022" drive can be used in Normal Duty mode on a 15 Hp motor, or in Heavy Duty mode on a 10 Hp motor. A "D014" drive can be used in Heavy Duty mode on a 7.5 Hp motor with the same ratings as a "D011." The drive can be programmed for either mode. Wiring and fuses can be sized based on the programmed mode. For any given drive catalog number, Normal Duty mode provides higher continuous current but smaller overload current with respect to Heavy Duty mode. See parameter 306 [Duty Rating].
(2) Enclosure codes F, N, and R only. See Frame/Rating Cross-Reference in PowerFlex 750-Series AC Drives Technical Data, publication 750-TD001, for frame sizes of other enclosure types.
(3) Minimum protection device size is the lowest rated device that supplies maximum protection without nuisance tripping.
(4) 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.
(5) Circuit Breaker - inverse time breaker. For US NEC, minimum size is 125% of motor FLA. Ratings shown are maximum.
(6) Recommended Motor circuit protector - Instantaneous trip circuit breaker. The trip setting should be set to the input current of the drive and should be sized for the continuous current of the system.
(7) Bulletin 140M with adjustable current range should have the current trip set to the minimum range that the device will not trip.
(8) Manual Self-Protected (Type E) Combination Motor Controller, UL listed for 480Y/277V and 600Y/347V AC Input. Not UL listed for use on 480V or 600V Delta/Delta, corner ground, or high-resistance ground systems.
(9) When using a Manual Self-Protected (Type E) Combination Motor Controller, the drive must be installed in a ventilated or non-ventilated enclosure with the minimum volume specified in this column. Application specific thermal considerations may require a larger enclosure.
(10) See Fuse Certification and Test Data in PowerFlex AC Drives in Common Bus Configurations Application Guidelines, publication DRIVES-AT002, for fuse self-certification and test data for Bussmann 170M and JKS fuses recommended for the DC bus fusing.

480 Volt AC and 650 Volt DC Input Protection Devices - Floor Mount Frames 8 and 9

Applied Rating[1]	Frame	Cont. Output Amps	Duty	Catalog Number	Output Overload Amps		Continuous AC Input	AC Input Integral Semiconductor Fuse Size (170M)[2]	DC Bay to Bay Integral Semiconductor Fuse Size (170M)	AC Input Protection Devices Recommended for Branch Circuit Protection (Does not apply to 21G Drives with Options)								Input Quantities	DC Input Integral Semiconductor Fuse Size (170M)[8]
										Dual Element Time Delay Fuse			Non-Time Delay Fuse			Circuit Breaker Max Size[6]	Motor Circuit Protector[7]	Continuous DC Input	
					1 min	3 sec				1/Phase Min[4]	2/Phase Min[4]	Max[5]	1/Phase Min[4]	2/Phase Min[4]	Max[5]				
480V AC Input																		**650V DC Input**	
							Amps	Amps	Amps									Amps	Amps
300 Hp	8	370	Heavy	20G…D430	555	666	349	1100	–	450	–	800	450	–	1100	1100	450	407	1600
350 Hp	8	430	Normal	20G…D430	473	666	406	1100	–	550	–	900	550	–	1200	1200	550	473	1600
		414	Heavy	20G…D485	621	745	391	1100	–	500	–	900	500	–	1200	1200	500	455	1600
		454	Heavy	20G…D545	681	818	428	1100	–	550	–	1000	550	–	1300	1300	550	499	1600
400 Hp	8	485	Light	20G…D430	534	–	458	1100	–	600	–	1000	600	–	1400	1400	600	533	1600
		485	Normal	20G…D485	534	745	458	1100	–	600	–	1000	600	–	1400	1400	600	533	1600
		485	Heavy	20G…D617	728	926	458	1100	–	600	–	1000	600	–	1400	1400	600	533	1600
450 Hp	8	545	Light	20G…D485	600	–	514	1100	–	650	–	1200	650	–	1600	1600	650	599	1600
		545	Normal	20G…D545	600	818	514	1100	–	650	–	1200	650	–	1600	1600	650	599	1600
		545	Heavy	20G…D710	818	1065	514	1100	–	650	325	1200	650	325	1600	1600	650	599	1600
500 Hp	8	590	Light	20G…D545	649	–	557	1100	–	700	–	1300	700	–	1700	1700	700	649	1600
		617	Normal	20G…D617	679	926	582	1100	–	750	325	1300	750	325	1800	1800	800	678	1600
		617	Heavy	20G…D740	926	1110	582	1100	–	750	375	1300	750	375	2400	1800	800	678	1600
600 Hp	8	710	Light	20G…D617	781	–	670	1100	–	850	425	1500	850	425	2100	2100	900	781	1600
		710	Normal	20G…D710	781	1065	670	1100	–	850	425	1500	850	425	2100	2100	900	781	1600
650 Hp	8	765	Light	20G…D710	842	–	722	1100	–	1000	500	1700	1000	500	2200	2200	1000	841	1600
		740	Normal	20G…D740	814	1110	698	1100	–	900	450	1600	900	450	2200	2200	900	814	1600
700 Hp	8	800	Light	20G…D740	880	–	755	1100	–	1000	500	1800	1000	500	1800	2400	1000	880	1600
600 Hp	9	710	Heavy	20G…D800	1065	1278	670	1100	1400[3]	850	425	1500	850	425	2000	2000	850	781	1600[3]
700 Hp	9	795	Heavy	20G…D960	1193	1440	750	1100	1400[3]	950	475	1700	950	475	2300	2300	950	874	1600[3]
		800	Normal	20G…D800	880	1278	755	1100	1400[3]	950	475	1700	950	475	2300	2300	950	880	1600[3]
750 Hp	9	800	Heavy	20G…D1K0	1200	1568	755	1100	1400[3]	950	475	1700	950	475	2300	2300	950	880	1600[3]
800 Hp	9	960	Light	20G…D800	1056	–	906	1100	1400[3]	1150	575	2000	1150	575	2700	2700	1150	1055	1600[3]
		960	Normal	20G…D960	1056	1440	906	1100	1400[3]	1150	575	2000	1150	575	2700	2700	1150	1055	1600[3]
		960	Heavy	20G…D1K2	1440	1728	906	1100	1400[3]	1150	575	2000	1150	575	2700	2700	1150	1055	1600[3]
900 Hp	9	1045	Light	20G…D960	1150	–	986	1100	1400[3]	1250	625	2200	1250	625	3000	3000	1250	1149	1600[3]
		1045	Normal	20G…D1K0	1150	1568	986	1100	1400[3]	1250	625	2200	1250	625	3000	3000	1250	1149	1600[3]
		1045	Heavy	20G…D1K3	1568	2048	986	1100	1400[3]	1250	625	2200	1250	625	3000	3000	1250	1149	1600[3]

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Applied Rating[1]	Frame	Cont. Output Amps	Duty	Catalog Number	Output Overload Amps		Continuous AC Input	AC Input Integral Semiconductor Fuse Size (170M)[2]	DC Bay to Bay Integral Semiconductor Fuse Size (170M)	AC Input Protection Devices Recommended for Branch Circuit Protection (Does not apply to 21G Drives with Options)								Input Quantities	DC Input Integral Semiconductor Fuse Size (170M)[8]
										Dual Element Time Delay Fuse			Non-Time Delay Fuse			Circuit Breaker Max Size[6]	Motor Circuit Protector[7]	Continuous DC Input	
					1 min	3 sec				1/Phase Min[4]	2/Phase Min[4]	Max[5]	1/Phase Min[4]	2/Phase Min[4]	Max[5]			Amps	Amps
480V AC Input (continued)																		**650V DC Input (continued)**	
1000 Hp	9	1135	Light	20G…D1K0	1249	–	1071	1100	1400[3]	1350	675	2400	1350	675	3200	3200	1350	1248	1600[3]
		1135	Normal	20G…D1K2	1249	1728	1071	1100	1400[3]	1350	675	2400	1350	675	3200	3200	1350	1248	1600[3]
		1135	Heavy	20G…D1K4	1703	2130	1071	1100	1400[3]	1350	675	2400	1350	675	3200	3200	1350	1248	1600[3]
1100 Hp	9	1365	Light	20G…D1K2	1502	–	1288	1100	1400[3]	1600	800	2900	1600	800	3900	3900	1600	1501	1600[3]
		1365	Normal	20G…D1K3	1502	2048	1288	1100	1400[3]	1600	800	2900	1600	800	3900	3900	1600	1501	1600[3]
1250 Hp	9	1420	Light	20G…D1K3	1562	–	1340	1100	1400[3]	1700	850	3000	1700	850	4000	4000	1700	1561	1600[3]
		1420	Normal	20G…D1K4	1562	2130	1340	1100	1400[3]	1700	850	3000	1700	850	4000	4000	1700	1561	1600[3]
1350 Hp	9	1540	Light	20G…D1K4	1694	–	1453	1100	1400[3]	1800	900	3300	1800	900	4400	4400	1800	1693	1600[3]

(1) "Applied Rating" refers to the motor that will be connected to the drive. For example, a "D430" drive can be used in Normal Duty mode on a 350 Hp motor, in Heavy Duty mode on a 300 Hp motor or in Light Duty mode on a 400 Hp motor. The drive can be programmed for each mode. Wiring and fuses can be sized based on the programmed mode. For any given drive catalog number, Normal Duty mode provides higher continuous current but smaller overload current with respect to Heavy Duty mode. See parameter 306 [Duty Rating]. Refer to Specifications for an explanation of Duty Ratings.

(2) These AC line fuses (with blown fuse indicators) are included in the drive to provide drive short circuit protection. AC input protection devices for branch circuit protection based on US NEC are listed in the table. Each drive bay has one fuse per phase.

(3) Each drive bay has one fuse per DC line.

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

(5) 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.

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

(7) Recommended Motor circuit protector - Instantaneous trip circuit breaker. The trip setting should be set to the input current of the drive and should be sized for the continuous current of the system.

(8) These DC line fuses (with blown fuse indicators) are included in the drive to provide drive short circuit protection.

600 Volt AC and 810V DC Input Protection Devices - Wall Mount Frames 3...7

Applied Rating (1)	Frame	Cont. Output Amps	Drive Sized For Normal Duty			Drive Sized For Heavy Duty			Continuous AC Input	AC Input Protection Devices										Input Quantities	DC Input Protection (11)
			Catalog Number	Output Overload Amps		Catalog Number	Output Overload Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker Max Size (6)	Motor Circuit Protector (7)	140M Type E Combination Motor Controller with Adjustable Current Range (8) (9)				Continuous DC Input	
			(x = F or G)	1 min	3 sec	(x = F or G)	1 min	3 sec	Amps	Min (2)	Max (3)	Min (2)	Max (3)			Cat. No.			Min Enclosure Volume (in.^{3}) (10)	Amps	Non-Time Delay Fuse
600 Volt AC Input																				**810 Volt DC Input**	
0.5 Hp	3	0.9				20x...E1P7	1.4	2.6	0.8	1	2	1	3	3	1	M-C2E-B16	M-D8E-B16		9086	1.0	JKS-2
1 Hp	3	1.7	20x...E1P7	1.9	2.6	20x...E2P7	2.6	4.1	1.6	2	4	2	5	5	2	M-C2E-B25	M-D8E-B25		9086	1.9	JKS-4
2 Hp	3	2.7	20x...E2P7	3.0	4.1	20x...E3P9	4.1	5.9	2.5	3	6	3	8	8	3	M-C2E-B40	M-D8E-B40		9086	3.0	JKS-5
3 Hp	3	3.9	20x...E3P9	4.3	5.9	20x...E6P1	5.9	9.2	3.7	5	8	5	11(4), 10(5)	11(4), 20(5)	5		M-D8E-B63		9086	4.3	JKS-8
5 Hp	3	6.1	20x...E6P1	6.7	9.2	20x...E9P0	9.2	13.5	5.7	7	13	7	15	20	10		M-D8E-B63		9086	6.7	HSJ10
7.5 Hp	3	9	20x...E9P0	9.9	13.5	20x...E011	13.5	16.5	8.4	11	19	11	25	30	15		M-D8E-C10	M-F8E-C10	9086	9.9	HSJ15
10 Hp	3	11	20x...E011	12.1	16.5	20x...E017	16.5	25.5	10.3	13	23	13	30	40	15		M-D8E-C16	M-F8E-C16	9086	12.0	HSJ20
15 Hp	3	17	20x...E017	18.7	25.5	20x...E022	25.5	33.0	16.0	20	36	20	50	50	20			M-F8E-C20	9086	18.6	HSJ30
20 Hp	3	22	20x...E022	24.2	33.0				20.7	26	46	26	60	70	30			M-F8E-C25	9086	24.1	HSJ40
	4	22				20x...E027	33.0	40.5	20.7	26	46	26	60	70	30			M-F8E-C25	9086	24.1	HSJ40
25 Hp	4	27	20x...E027	29.7	40.5	20x...E032	40.5	48.6	25.3	32	57	32	75	80	35			M-F8E-C32	9086	29.6	HSJ50
30 Hp	4	32	20x...E032	35.2	48.0				30.0	38	68	38	90	100	40			M-F8E-C32	9086	35.0	HSJ60
	5	32				20x...E041	48.0	61.5	30.0	38	68	38	90	100	40			M-F8E-C32	13630	35.0	HSJ60
40 Hp	5	41	20x...E041	45.1	61.5	20x...E052	61.5	78.0	38.5	48	87	48	115	120	50					44.9	HSJ70
50 Hp	5	52	20x...E052	57.2	78.0				48.8	61	110	61	145	150	65					56.9	HSJ90
7.5 Hp	6	9.1				20x...E012	13.7	18.0	8.5	11	19	11	25	30	15		M-D8E-C10	M-D8E-C10	14400	10.0	HSJ15
10 Hp	6	12	20x...E012	13.2	18.0	20x...E018	18.0	27.0	11.3	14	25	14	35	40	15		M-D8E-C16	M-D8E-C16	14400	13.1	HSJ20
15 Hp	6	18	20x...E018	19.8	27.0	20x...E023	27.0	34.5	16.9	21	38	21	50	60	25			M-F8E-C20	14400	19.7	HSJ30
20 Hp	6	23	20x...E023	25.3	34.5	20x...E028	34.5	42.0	21.6	27(4), 25(5)	49(4), 50(5)	27(4), 25(5)	65	70	30			M-F8E-C25	14400	25.2	HSJ40
	6	24	20x...E024	26.4	36.0				22.5	28	51	28	70	70	30			M-F8E-C25	14400	26.3	HSJ40
	6	22				20x...E024	33.0	39.6	20.7	26	46	26	60	70	30			M-F8E-C25	14400	24.1	HSJ40
25 Hp	6	28	20x...E028	30.8	42.0	20x...E033	42.0	50.4	26.3	35	60	35	80	80	35			M-F8E-C32	14400	30.7	HSJ50
30 Hp	6	33	20x...E033	36.3	49.5	20x...E042	49.5	63.0	31.0	40	70	40	95	100	40			M-F8E-C32	14400	36.1	HSJ60
40 Hp	6	42	20x...E042	46.2	63.0	20x...E053	63.0	79.5	39.4	50	90	50	120	120	50					46.0	HSJ70
50 Hp	6	53(4), 52(5)	20x...E053	58.3	79.5	20x...E063	78.0	94.5	49.8(4), 48.8(5)	60	110	60	150(4), 145(5)	150	65					58.0(4), 56.9(5)	HSJ90

continued on page 60

Applied Rating (1)	Frame	Cont. Output Amps	Drive Sized For Normal Duty			Drive Sized For Heavy Duty			Continuous AC Input	AC Input Protection Devices									Input Quantities	DC Input Protection (11)
			Catalog Number	Output Overload Amps		Catalog Number	Output Overload Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker Max Size (6)	Motor Circuit Protector (7)	140M Type E Combination Motor Controller with Adjustable Current Range (8) (9)				Continuous DC Input	
			(x = F or G)	1 min	3 sec	(x = F or G)	1 min	3 sec	Amps	Min (2)	Max (3)	Min (2)	Max (3)			Cat. No.			Min Enclosure Volume (in.^{3}) (10)	Amps	Non-Time Delay Fuse
60 Hp	6	63	20x…E063	69.3	94.5	20x…E077	94.5	115.5	59.1	75	135	75	175	180	75					69.0	HSJ110
75 Hp	6	77	20x…E077	84.7	115.5	20x…E099	115.5	148.5	72.3	90	165	90	215	220	95					84.3	HSJ150
100 Hp	6	99	20x…E099	108.9	148.5	20x…E125	148.5	187.5	92.9	115	210	115	280	280	120					108.4	HSJ175
125 Hp	6	125	20x…E125	137.5	187.5	20x…E144	187.5	225.0	117.4	145	265	145	350	360	150					136.8	HSJ225
150 Hp	6	144	20x…E144	158.4	216.0				135.2	170	300	170	400	400	170					157.6	HSJ250
	7	144				20x…E192	216.0	288.0	135.2	170	305	170	405	410	170					157.6	HSJ250
200 Hp	7	192	20x…E192	211.2	288.0	20x…E242	288.0	363.0	180.3	225	405	225	540	550	230					210.2	HSJ350
250 Hp	7	242	20x…E242	266.2	363.0	20x…E289	363.0	435.6	227.2	285	510	285	680	690	285					264.9	HSJ400
300 Hp	7	289	20x…E289	317.9	433.5				271.3	340	600	340	800	800	340					316.4	HSJ500

(1) "Applied Rating" refers to the motor that will be connected to the drive. For example, a "E063" drive can be used in Normal Duty mode on a 60 Hp motor, in Heavy Duty mode on a 50 Hp motor. The drive can be programmed for each mode. Wiring and fuses can be sized based on the programmed mode. For any given drive catalog number, Normal Duty mode provides higher continuous current but smaller overload current with respect to Heavy Duty mode. See parameter 306 [Duty Rating]. Refer to Specifications for an explanation of Duty Ratings.

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

(3) 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.

(4) Normal duty.

(5) Heavy duty.

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

(7) Recommended Motor circuit protector - Instantaneous trip circuit breaker. The trip setting should be set to the input current of the drive and should be sized for the continuous current of the system.

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

(9) Manual Self-Protected (Type E) Combination Motor Controller, UL listed for 480Y/277V and 600Y/347V AC Input. Not UL listed for use on 480V or 600V Delta/Delta, corner ground, or high-resistance ground systems.

(10) When using a Manual Self-Protected (Type E) Combination Motor Controller, the drive must be installed in a ventilated or non-ventilated enclosure with the minimum volume specified in this column. Application specific thermal considerations may require a larger enclosure.

(11) See Fuse Certification and Test Data in PowerFlex AC Drives in Common Bus Configurations Application Guidelines, publication DRIVES-AT002, for fuse self-certification and test data for Bussmann 170M and JKS fuses recommended for the DC bus fusing.

600 Volt AC and 810V DC Input Protection Devices - Floor Mount Frames 8 and 9

Applied Rating[1]	Frame	Cont. Output Amps	Duty	Catalog Number	Output Overload Amps		Continuous AC Input	AC Input Integral Semiconductor Fuse Size (170M)[2]	DC Bay to Bay Integral Semiconductor Fuse Size (170M6648)	AC Input Protection Devices Recommended for Branch Circuit Protection (Does not apply to 21G Drives with Options)								Input Quantities	DC Input Integral Semiconductor Fuse Size (170M6253)[7]
										Dual Element Time Delay Fuse			Non-Time Delay Fuse			Circuit Breaker Max Size[5]	Motor Circuit Protector[6]	Continuous DC Input	
					1 min	3 sec				1/Phase Min[3]	2/Phase Min[3]	Max[4]	1/Phase Min[3]	2/Phase Min[3]	Max[4]				
							Amps	Amps	Amps									Amps	Amps
600V AC Input																		**810V DC Input**	
250 Hp	8	272	Heavy	20G…E295	408	490	257	900	–	350	175	600	350	175	800	800	350	300	1000
300 Hp	8	295	Heavy	20G…E355	443	533	278	900	–	350	175	700	350	175	900	900	350	325	1000
		295	Normal	20G…E295	325	490	278	900	–	400	200	700	400	200	1000	1000	400	325	1000
350 Hp	8	355	Light	20G…E295	391	–	335	900	–	450	225	800	450	225	1100	1100	450	391	1000
		355	Normal	20G…E355	391	533	335	900	–	450	225	800	450	225	1100	1100	450	391	1000
		329	Heavy	20G…E395	494	593	310	900	–	400	200	700	400	200	1000	1000	400	363	1000
		355	Heavy	20G…E435	533	639	335	900	–	450	225	800	450	225	1100	1100	450	391	1000
400 Hp	8	395	Light	20G…E355	435	–	373	900	–	500	250	900	500	250	1200	1200	500	436	1000
		395	Normal	20G…E395	435	593	373	900	–	500	250	900	500	250	1200	1200	500	436	1000
		395	Heavy	20G…E460	593	711	373	900	–	500	250	900	500	250	1200	1200	500	436	1000
450 Hp	8	435	Light	20G…E395	479	–	411	900	–	550	275	1000	550	275	1300	1300	550	480	1000
		435	Normal	20G…E435	479	639	411	900	–	500	250	900	500	250	1200	1200	500	480	1000
		425	Heavy	20G…E510	638	765	401	900	–	550	275	1000	550	275	1300	1300	550	469	1000
500 Hp	8	460	Light	20G…E435	506	–	434	900	–	550	275	1000	550	275	1300	1300	550	507	1000
		510	Light	20G…E460	561	–	481	900	–	650	325	1100	650	325	1500	1500	650	562	1000
		460	Normal	20G…E460	506	711	434	900	–	550	275	1000	550	275	1300	1300	550	507	1000
		510	Normal	20G…E510	561	765	481	900	–	650	325	1100	650	325	1500	1500	650	562	1000
550 Hp	8	545	Light	20G…E510	600	–	514	900	–	650	325	1200	650	325	1600	1600	650	601	1000
500 Hp	9	510	Heavy	20G…E595	765	918	481	900	1000	600	300	1100	600	300	1400	1400	600	562	1000
600 Hp	9	595	Heavy	20G…E630	893	1071	562	900	1000	700	350	1300	700	350	1700	1700	700	656	1000
		595	Normal	20G…E595	655	918	562	900	1000	700	350	1300	700	350	1700	1700	700	656	1000
700 Hp	9	630	Heavy	20G…E760	945	1149	595	900	1000	750	375	1300	750	375	1800	1800	750	695	1000
		630	Normal	20G…E630	693	1071	595	900	1000	750	375	1300	750	375	1800	1800	750	695	1000
		595	Light	20G…E595	693	–	651	900	1000	800	400	1500	800	400	2000	2000	800	761	1000
750 Hp	9	700	Heavy	20G…E825	1050	1260	661	900	1000	850	425	1500	850	425	2000	2000	850	772	1000
800 Hp	9	760	Heavy	20G…E900	1140	1368	717	900	1000	900	450	1600	900	450	2200	2200	900	838	1000
		760	Normal	20G…E760	836	1140	717	900	1000	900	450	1600	900	450	2200	2200	900	838	1000
		760	Light	20G…E630	836	–	717	900	1000	900	450	1600	900	450	2200	2200	900	838	1000

continued on page 62

Applied Rating[1]	Frame	Cont. Output Amps	Duty	Catalog Number	Output Overload Amps		Continuous AC Input	AC Input Integral Semiconductor Fuse Size (170M)[2]	DC Bay to Bay Integral Semiconductor Fuse Size (170M6648)	AC Input Protection Devices Recommended for Branch Circuit Protection (Does not apply to 21G Drives with Options)								Input Quantities	DC Input Integral Semiconductor Fuse Size (170M6253)[7]
										Dual Element Time Delay Fuse			Non-Time Delay Fuse			Circuit Breaker Max Size[5]	Motor Circuit Protector[6]	Continuous DC Input	
					1 min	3 sec				1/Phase Min[3]	2/Phase Min[3]	Max[4]	1/Phase Min[3]	2/Phase Min[3]	Max[4]				
							Amps	Amps	Amps									Amps	Amps
600V AC Input (continued)																		**810V DC Input (continued)**	
900 Hp	9	815	Heavy	20G…E980	1223	1470	769	900	1000	950	475	1700	950	475	2300	2300	950	899	1000
		825	Normal	20G…E825	908	1260	779	900	1000	950	475	1800	950	475	2300	2300	950	910	1000
		835	Light	20G…E760	919	–	788	900	1000	1000	500	1800	1000	500	2400	2400	1000	921	1000
950 Hp	9	900	Normal	20G…E900	990	1368	849	900	1000	1050	525	1900	1050	525	2500	2500	1050	993	1000
		900	Light	20G…E825	990	–	849	900	1000	1050	525	1900	1050	525	2500	2500	1050	993	1000
1000 Hp	9	980	Normal	20G…E980	1078	1470	925	900	1000	1150	575	2100	1150	575	2800	2800	1150	1081	1000
		980	Light	20G…E900	1078	–	925	900	1000	1150	575	2100	1150	575	2800	2800	1150	1081	1000
1100 Hp	9	1045	Light	20G…E980	1150	–	986	900	1000	1250	625	2200	1250	625	3000	3000	1250	1152	1000

(1) "Applied Rating" refers to the motor that will be connected to the drive. For example, a "E420" drive can be used in Normal Duty mode on a 450 Hp motor, in Heavy Duty mode on a 350 Hp motor or in Light Duty mode on a 500 Hp motor. The drive can be programmed for each mode. Wiring and fuses can be sized based on the programmed mode. For any given drive catalog number, Normal Duty mode provides higher continuous current but smaller overload current with respect to Heavy Duty mode. See parameter 306 [Duty Rating]. Refer to Specifications for an explanation of Duty Ratings.

(2) These AC line fuses (with blown fuse indicators) are included in the drive to provide drive short circuit protection. AC input protection devices for branch circuit protection based on US NEC are listed in the table. Each drive bay has one fuse per phase.

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

(4) 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.

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

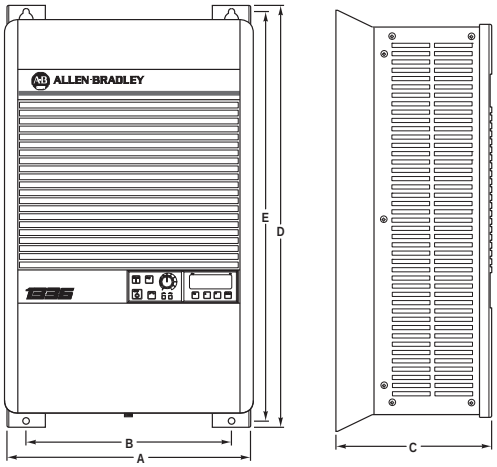
(6) Recommended Motor circuit protector - Instantaneous trip circuit breaker. The trip setting should be set to the input current of the drive and should be sized for the continuous current of the system.

(7) These DC line fuses (with blown fuse indicators) are included in the drive to provide drive short circuit protection.

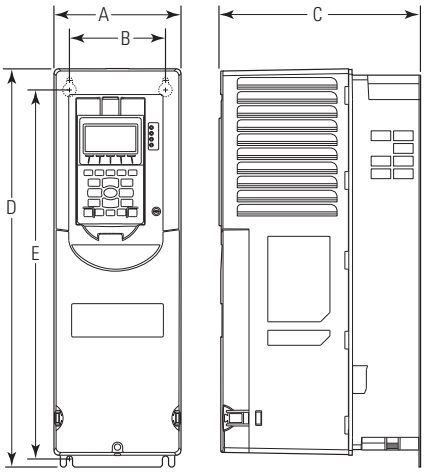
Dimensions

Figure 6 - 1336-Series Drives to PowerFlex 750-Series Frames 1…3

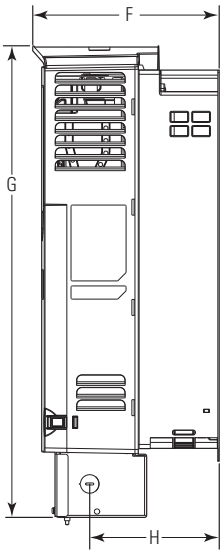
1336-Series Drives
(CLASSIC shown)
(Dimension callouts represent all 1336-Series drives.)



PowerFlex 750-Series Frame 2



PowerFlex 750-Series Frame 2 w/NEMA Type 1 Kit

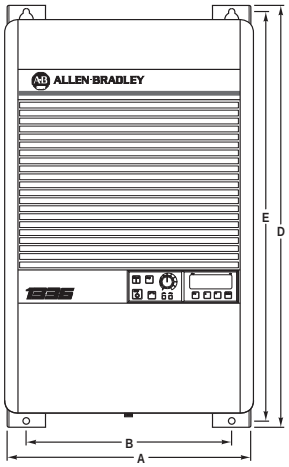


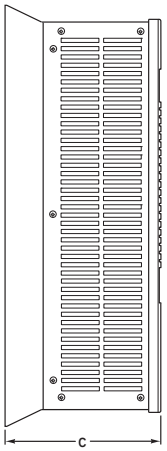
Drive	Frame	Dimensions mm (in.)							
		A	B	C	D	E	F	G	H
CLASSIC	B003…B010 C003…C010	283 (11.13)	213 (8.38)	223 (8.76)	477 (18.75)	461 (18.15)			
PLUS	A1…A3	215.9 (8.50)	185.2 (7.29)	160.0 (6.30)(1) 180.5 (7.10)(2) 207.0 (8.15)(3)	290.0 (11.42)	275.0 (10.83)			
	A4	260.0 (10.24)	230.0 (9.06)	212.0 (8.35)	350.0 (13.78)	320.0 (12.60)			
	B1	276.4 (10.88)	212.6 (8.37)	225.0 (8.86)	476.3 (18.75)	461.0 (18.15)			
PLUS II IMPACT	A1…A3	215.9 (8.50)	185.2 (7.29)	160.0 (6.30)(1) 180.5 (7.10)(2) 207.0 (8.15)(3)	290.0 (11.42)	275.0 (10.83)			
	A4	260.0 (10.24)	230.0 (9.06)	212.0 (8.35)	350.0 (13.78)	320.0 (12.60)			
FORCE	B1	276.4 (10.88)	212.6 (8.37)	225.0 (8.86)	476.3 (18.75)	461.0 (18.15)			
750-Series	1	110.0 (4.33)	68 (2.68)	211 (8.31)	400.5 (15.77)	390.4 (15.37)			
	2	134.5 (5.30)	100.0 (3.94)	212.0 (8.35)	424.2 (16.70)	404.2 (15.91)	222.2 (8.75)	497.1 (19.57)	38.0 (1.50)
	3	190.0 (7.48)	158.0 (6.22)	212.0 (8.35)	454.0 (17.87)	435.0 (17.13)	223.1 (8.78)	530.1 (20.87)	38.0 (1.50)

(1) A1
(2) A2
(3) A3

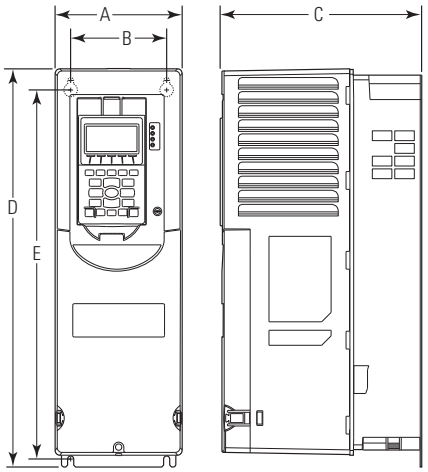
Figure 7 - 1336-Series Drives to PowerFlex 750-Series Frame 3

1336-Series Drives
(CLASSIC shown)
(Dimension callouts represent all 1336-Series drives.)

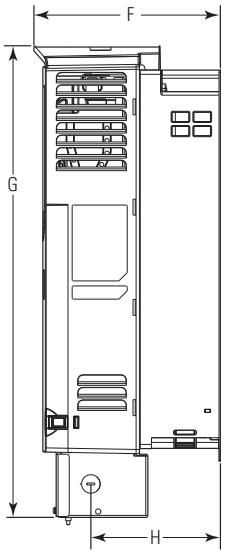




PowerFlex 750-Series Frame 3



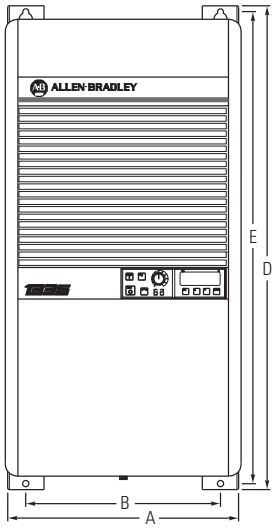
PowerFlex 750-Series Frame 3 w/NEMA Type 1 Kit

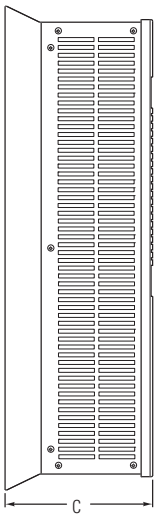


Drive	Frame	Dimensions mm (in.)							
		A	B	C	D	E	F	G	H
CLASSIC	B015…B020 C015	283 (11.13)	213 (8.38)	223 (8.76)	576 (22.66)	560 (22.06)			
PLUS	A4	260.0 (10.24)	230.0 (9.06)	212.0 (8.35)	350.0 (13.78)	320.0 (12.60)			
	B2	276.4 (10.88)	212.6 (8.37)	225.0 (8.86)	476.3 (18.75)	461.0 (18.15)			
PLUS II IMPACT	A4	260.0 (10.24)	230.0 (9.06)	212.0 (8.35)	350.0 (13.78)	320.0 (12.60)			
	B1/B2	276.4 (10.88)	212.6 (8.37)	225.0 (8.86)	476.3 (18.75)	461.0 (18.15)			
FORCE	B1/B2	276.4 (10.88)	212.6 (8.37)	225.0 (8.86)	476.3 (18.75)	461.0 (18.15)			
750-Series	3	190.0 (7.48)	158.0 (6.22)	212.0 (8.35)	454.0 (17.87)	435.0 (17.13)	223.1 (8.78)	530.1 (20.87)	38.0 (1.50)

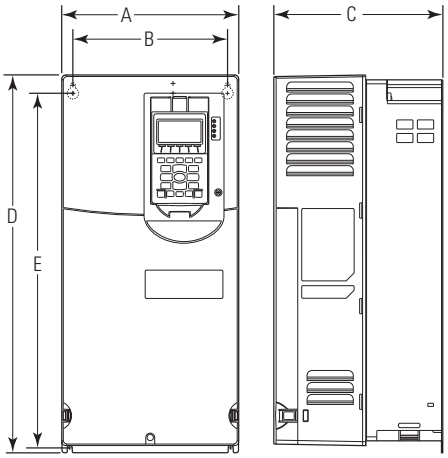
Figure 8 - 1336-Series Drives to PowerFlex 750-Series Frame 4

1336-Series Drives
(CLASSIC Shown)
(Dimension callouts represent all 1336-Series drives.)

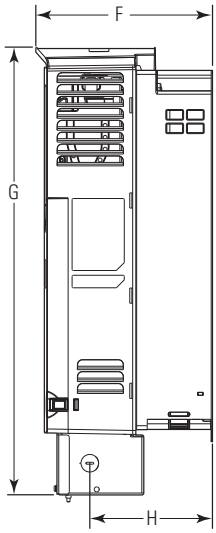




PowerFlex 750-Series Frame 4



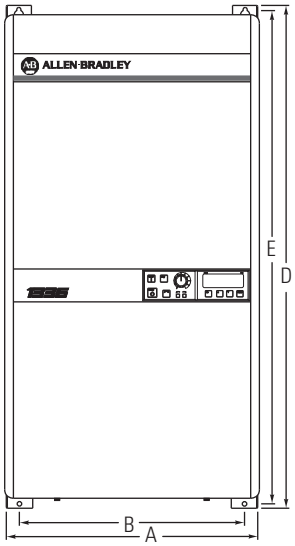
PowerFlex 750-Series Frame 4 w/NEMA Type 1 Kit

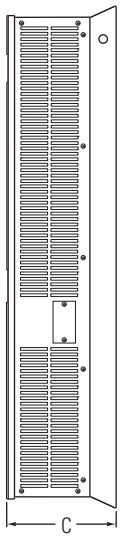


Drive	Frame	Dimensions mm (in.)							
		A	B	C	D	E	F	G	H
CLASSIC	B025… B030 C020… C025	364 (14.32)	297 (11.70)	235 (9.27)	599 (23.59)	570 (22.41)			
	B040	445 (17.50)	413 (16.25)	238 (9.38)	867 (34.12)	835 (32.88)			
PLUS PLUS II IMPACT	B2	276.4 (10.88)	212.6 (8.37)	225.0 (8.86)	476.3 (18.75)	461.0 (18.15)			
	C	301.8 (11.88)	238.0 (9.37)	225.0 (8.86)	701.0 (27.60)	685.8 (27.0)			
FORCE	B2	276.4 (10.88)	212.6 (8.37)	225.0 (8.86)	476.3 (18.75)	461.0 (18.15)			
	C	301.8 (11.88)	238.0 (9.37)	225.0 (8.86)	701.0 (27.60)	685.8 (27.00)			
750-Series	4	222.0 (8.74)	194.0 (7.64)	212.0 (8.35)	474.0 (18.66)	455.0 (17.91)	222.7 (8.77)	564.4 (22.22)	154.7 (6.09)

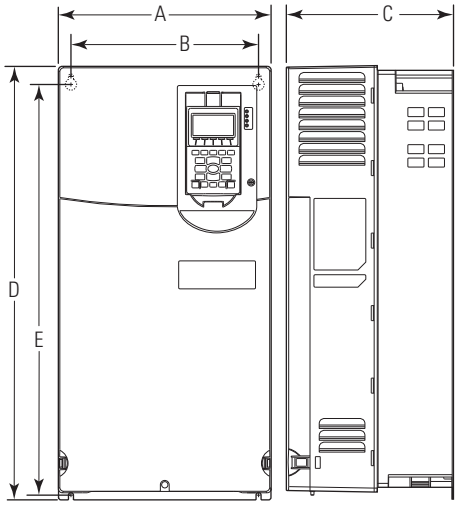
Figure 9 - 1336-Series Drives to PowerFlex 750-Series Frame 5

1336-Series Drives
(CLASSIC Shown)
(Dimension callouts represent all 1336-Series drives.)

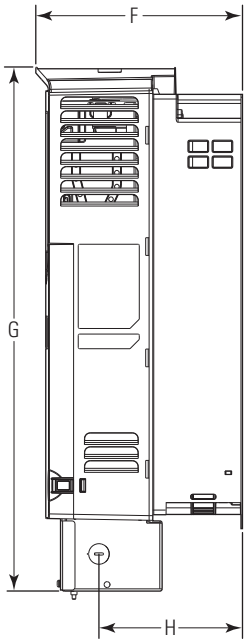




PowerFlex 750-Series Frame 5



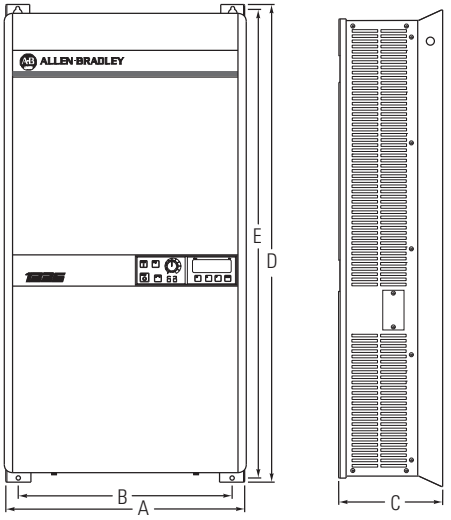
PowerFlex 750-Series Frame 5 w/NEMA Type 1 Kit



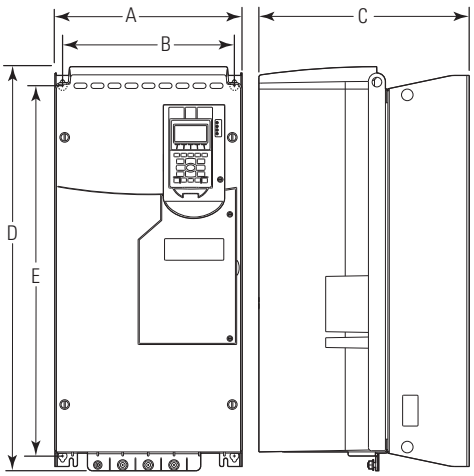
Drive	Frame	Dimensions mm (in.)							
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
CLASSIC	B050 C030…C040	445 (17.50)	413 (16.25)	238 (9.38)	867 (34.12)	835 (32.88)			
PLUS PLUS II	C	301.8 (11.88)	238.0 (9.37)	225.0 (8.86)	701.0 (27.60)	685.8 (27.0)			
	D	381.5 (15.02)	325.9 (12.83)	270.8 (10.66)	1240.0 (48.82)	1216.2 (47.88)			
IMPACT	C	301.8 (11.88)	238.0 (9.37)	225.0 (8.86)	701.0 (27.60)	685.8 (27.0)			
FORCE	C	301.8 (11.88)	238.0 (9.37)	225.0 (8.86)	701.0 (27.60)	685.8 (27.0)			
750-Series	5	270.0 (10.63)	238.0 (9.37)	212.0 (8.35)	550.0 (21.65)	531.0 (20.91)	222.7 (8.77)	665.4 (26.20)	155.0 (6.10)

Figure 10 - 1336-Series Drives to PowerFlex 750-Series Frame 6

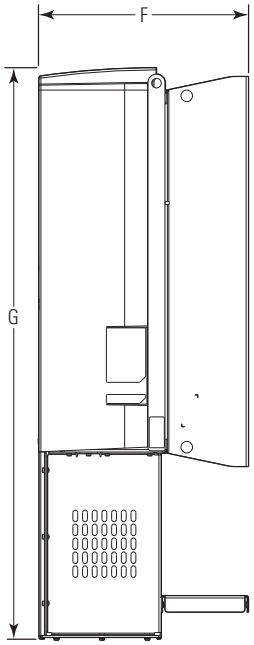
1336-Series Drives
(CLASSIC Shown)
(Dimension callouts represent all 1336-Series drives.)



PowerFlex 750-Series Frame 6



PowerFlex 750-Series Frame 6 w/NEMA Type 1 Kit



Drive	Frame	Dimensions mm (in.)							
		A	B	C	D	E	F	G	H
CLASSIC	B075… B125 C060… C125	639 (25.16)	607 (23.88)	351 (13.80)	1218 (47.94)	1189 (46.82)			
	B150	639 (25.16)	608 (23.92)	445 (17.50)	1599 (62.94)	1570 (61.82)			
PLUS PLUS II IMPACT	D	381.5 (15.02)	325.9 (12.83)	270.8 (10.66)	1240.0 (48.82)	1216.2 (47.88)			
	E	511.0 (20.12)	477.5 (18.80)	424.4 (16.71) 372.6 (14.67)(1)	1498.6 (59.00)	1447.8 (57.00)			
FORCE	D	381.5 (15.02)	325.9 (12.83)	270.8 (10.66)	1240.0 (48.82)	1216.2 (47.88)			
	E	511.0 (20.12)	477.5 (18.80)	424.4 (16.71) 372.6 (14.67)(1)	1498.6 (59.00)	1447.8 (57.00)			
750-Series	6	308.0 (12.13)	283.0 (11.14)	346.4 (13.64)	665.5 (26.20)	609.0 (23.98)	346.7 (13.65	945.1 (37.21)	

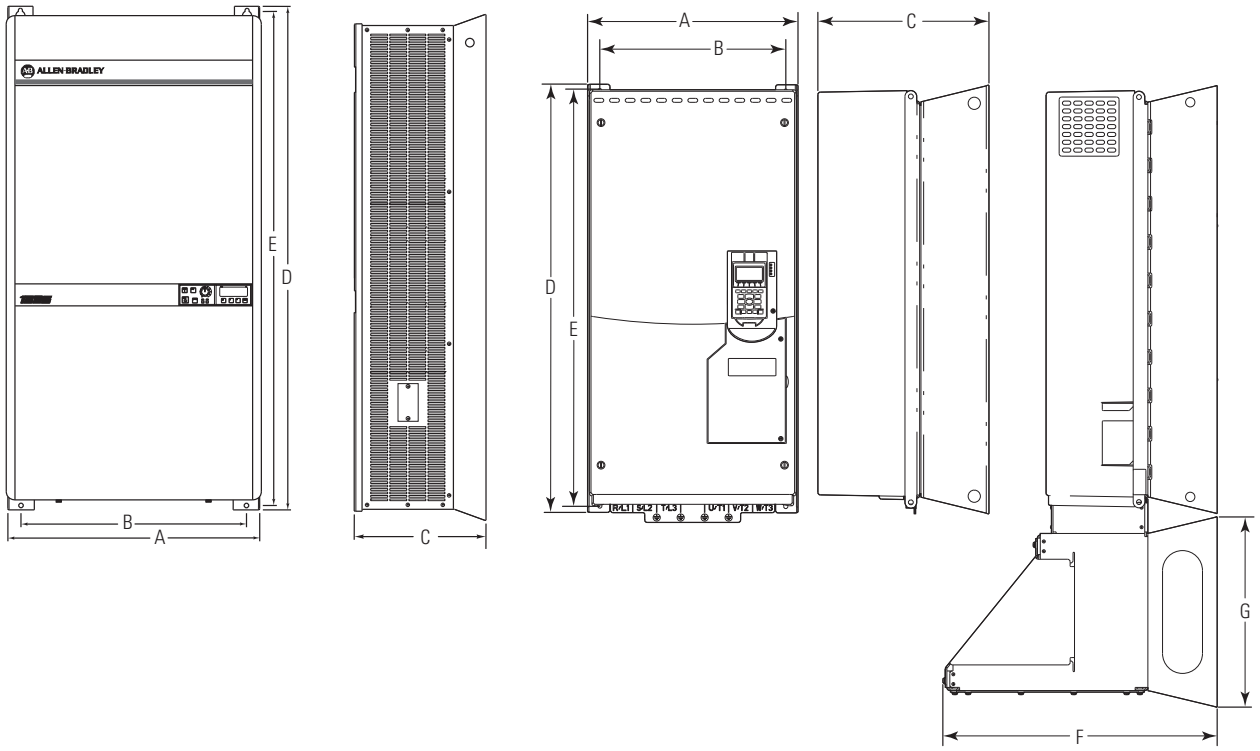
(1) IP00, NEMA/UL Type Open

Figure 11 - 1336-Series Drives to PowerFlex 750-Series Frame 7

1336-Series Drives
(CLASSIC Shown)
(Dimension callouts represent all 1336-Series drives.)

PowerFlex 750-Series Frame 7

PowerFlex 750-Series Frame 7 w/NEMA Type 1 Kit



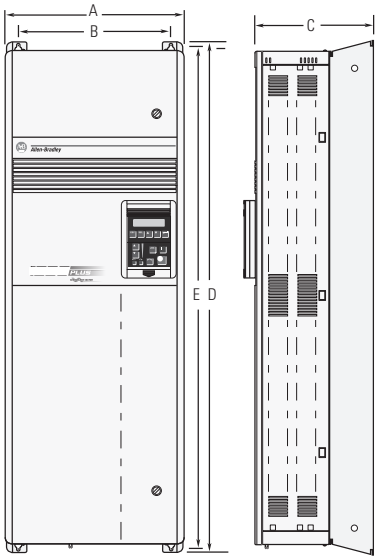
Drive	Frame	Dimensions mm (in.)							
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
CLASSIC	B200 C150… C200	639 (25.16)	608 (23.92)	445 (17.50)	1599 (62.94)	1570 (61.82)s			
PLUS PLUS II	E	511.0 (20.12)	477.5 (18.80)	424.4 (16.71) 372.6 (14.67)(2)	1498.6 (59.00)	1447.8 (57.00)			
	F	762.0 (30.0) 717.6 (28.25)(1)		635.0 (25.0) 463.6 (18.25)(1)	2286.0 (90.0) 1543.3 (60.76)(1)				
	G	762.0 (30.0) 648.0 (25.51)(2)		635.0 (25.0) 508.3 (20.01)(2)	2324.1 (91.50) 1524.0 (60.0)(2)				
IMPACT	E	511.0 (20.12)	477.5 (18.80)	424.4 (16.71) 372.6 (14.67)(2)	1498.6 (59.00)	1447.8 (57.00)			
	F	762.0 (30.0)		635.0 (25.0)	2286.0 (90.0)				
FORCE	E	511.0 (20.12)	477.5 (18.80)	424.4 (16.71) 372.6 (14.67)(2)	1498.6 (59.00)	1447.8 (57.00)			
	F	762.0 (30.0)		635.0 (25.0)	2286.0 (90.00)				
	G	762.0 (30.0)		635.0 (25.0)	2324.1 (91.50)				
750-Series	7	430.0 (16.93)	380.0 (14.96)	349.6 (13.76)	881.5 (34.7)	838.0 (33.0)	561.0 (22.08)	389.2 (15.32)	

(1) PLUS II only, Roll-In Chassis, IP00, NEMA/UL Type Open.
(2) IP00, NEMA/UL Type Open.

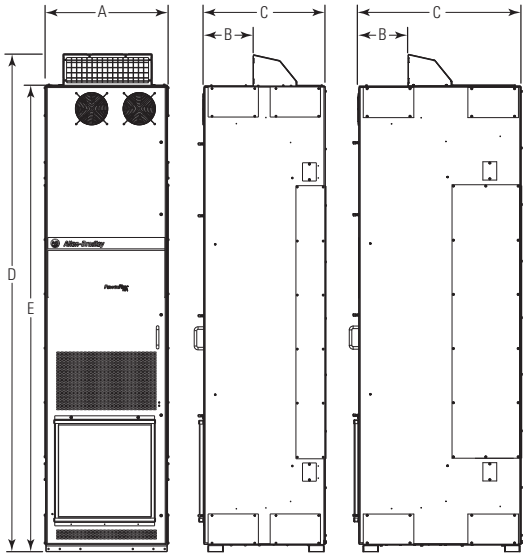
Figure 12 - 1336-Series Drives to PowerFlex 755 Frame 8 (IP20)

NOTE: PowerFlex 753 Drive is not available in a Frame 8 model.

1336-Series Drives
(PLUS Shown)
(Dimension callouts represent all 1336-Series drives.)



PowerFlex 755 Frame 8
(IP20, NEMA/UL Type 1)



With 2500
MCC Cabinet
(Enclosure Code B)

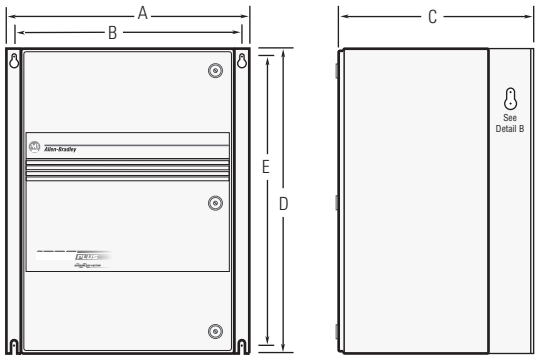
With 2500
MCC Cabinet
(Enclosure Code L)

Drive	Frame	Dimensions mm (in.)							
		A	B	C	D	E	F	G	H
CLASSIC[1]									
PLUS PLUS II IMPACT	F	762.0 (30.0) 717.6 (28.25)[2]		635.0 (25.0) 463.6 (18.25)[2]	2286.0 (90.0) 1543.3 (60.76)[2]				
	G	762.0 (30.0) 648.0 (25.51)[4]		635.0 (25.0) 508.3 (20.01)[4]	2324.1 (91.50) 1524.0 (60.0)[4]				
	H	1270.0 (50.0)		635.0 (25.0)	2324.1 (91.50) 2959.1 (116.5)[7]				
FORCE	F	762.0 (30.0)		635.0 (25.0)	2286.0 (90.00)				
	G	762.0 (30.0)		635.0 (25.0)	2324.1 (91.50)				
	H	1270.0 (50.0)		635.0 (25.0)	2324.1 (91.50) 2959.1 (116.5)[7]				
755	8	600.0 (23.6)	240.0 (9.4)[3]	600.0 (23.6)[5] 800.0 (31.5)[6]	2453.0 (96.60)	2300.0 (90.6)			
	9	1200.0 (47.2)	240.0 (9.4)	800.0 (31.5)	2453.0 (96.6)	2300.0 (90.6)			

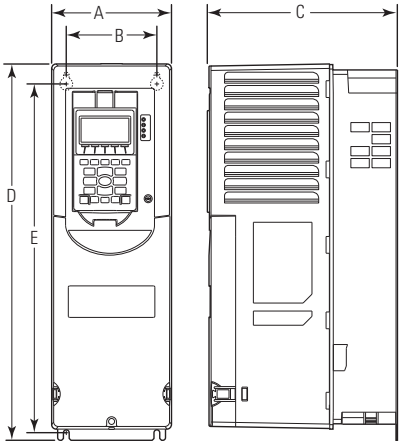
(1) 1336 CLASSIC drives have no compatible model to the PowerFlex 755 Frame 8 and Frame 9.
(2) PLUS II only, Roll-In Chassis, IP00, NEMA/UL Type Open.
(3) Refer to Figure 12, PowerFlex 755 Frame 8.
(4) IP00, NEMA/UL Type Open.
(5) For 2500 MCC cabinet enclosure code B.
(6) For 2500 MCC cabinet enclosure code L.
(7) Including top-mounted fan. Manufacturer-dependent; may be shorter.

Figure 13 - 1336 PLUS IP 65/54 (NEMA Type 4/14) Drives to PowerFlex 750-Series Frames 2…5

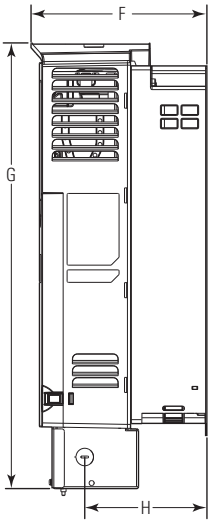
1336-Series Drives
(IP 65/54 [NEMA Type 4/14] Drives)
(Dimension callouts represent all 1336-Series drives.)



PowerFlex 750-Series Frames
(Frame 2 shown)



PowerFlex 750-Series
w/NEMA Type1 Kit
(Frame 2 shown)



Drive	Frame	Dimensions mm (in.)							
		A	B	C	D	E	F	G	H
PLUS PLUS II IMPACT (IP 65/54)	A1…A3	430.0 (16.93)	404.9 (15.94)	350.0 (13.78)	525.0 (20.67)	500.1 (19.69)			
	A4	655.0 (25.79)	629.9 (24.80)	425.0 (16.74)	650.0 (25.59)	625.1 (24.61)			
	B1/B2	655.0 (25.79)	629.9 (24.80)	425.0 (16.74)	650.0 (25.59)(1) 900.0 (35.43)(2)	625.1 (24.61)(1) 875.0 (34.45)(2)			
	C	655.0 (25.79)	629.9 (24.80)	425.0 (16.74)	1200.0 (47.24)	1174.5 (46.22)			
750-Series	2	134.5 (5.30)	100.0 (3.94)	212.0 (8.35)	424.2 (16.70)	404.2 (15.91)	222.2 (8.75)	497.1 (19.57)	38.0 (1.50)
	3	190.0 (7.48)	158.0 (6.22)	212.0 (8.35)	454.0 (17.87)	435.0 (17.13)	223.1 (8.78)	530.1 (20.87)	38.0 (1.50)
	4	222.0 (8.74)	194.0 (7.64)	212.0 (8.35)	474.0 (18.66)	455.0 (17.91)	222.7 (8.77)	564.4 (22.22)	154.7 (6.09)
	5	270.0 (10.63)	238.0 (9.37)	212.0 (8.35)	550.0 (21.65)	531.0 (20.91)	222.7 (8.77)	665.4 (26.20)	155.0 (6.10)

(1) B1
(2) B2

Power Terminal Comparison

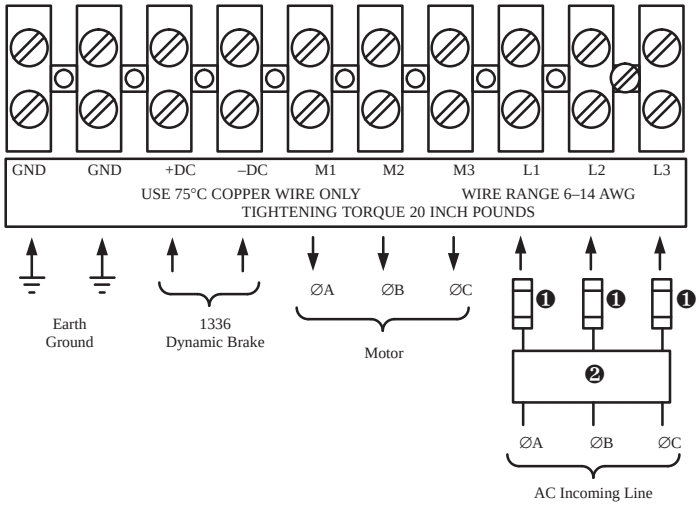
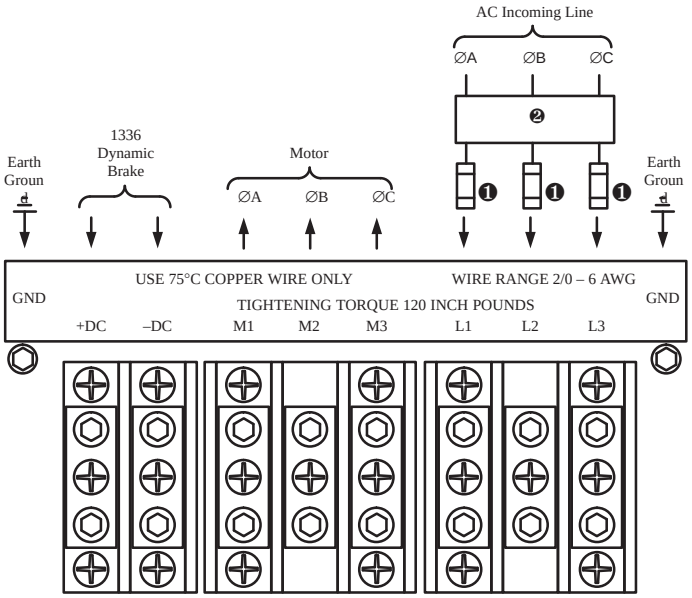
1336 CLASSIC Drives

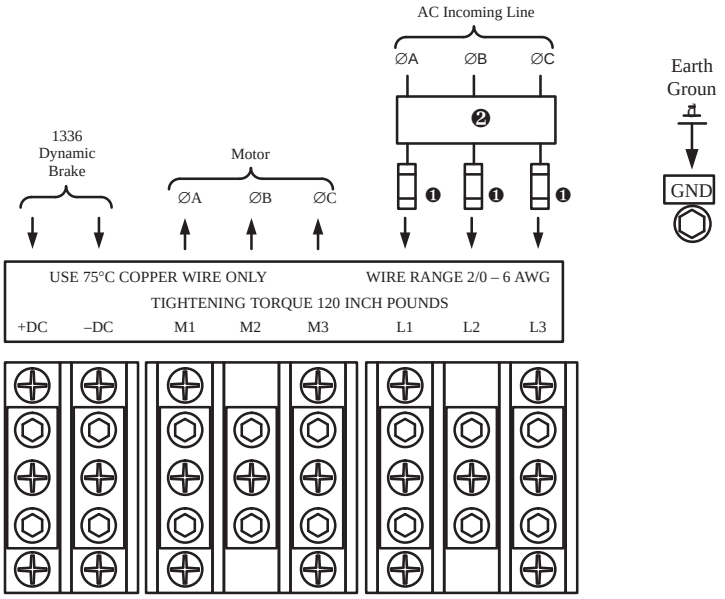
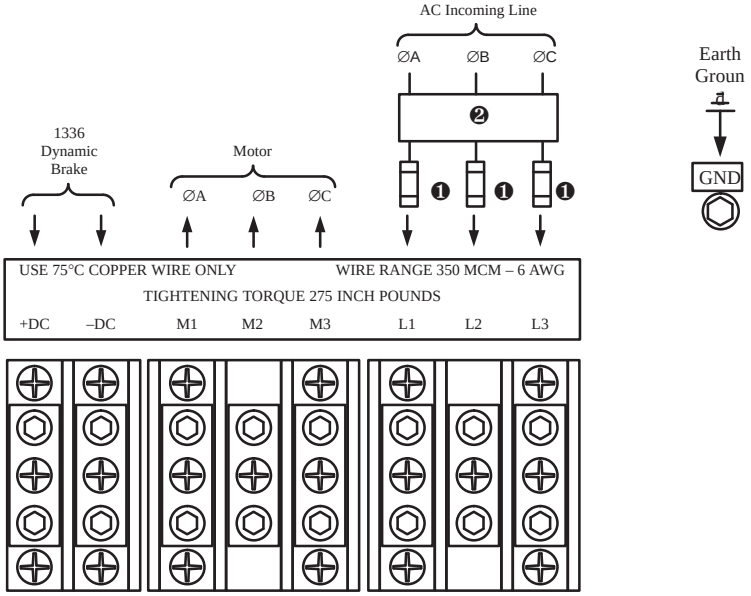
Table 27 - 1336 CLASSIC Drive Power Terminal Block Specifications

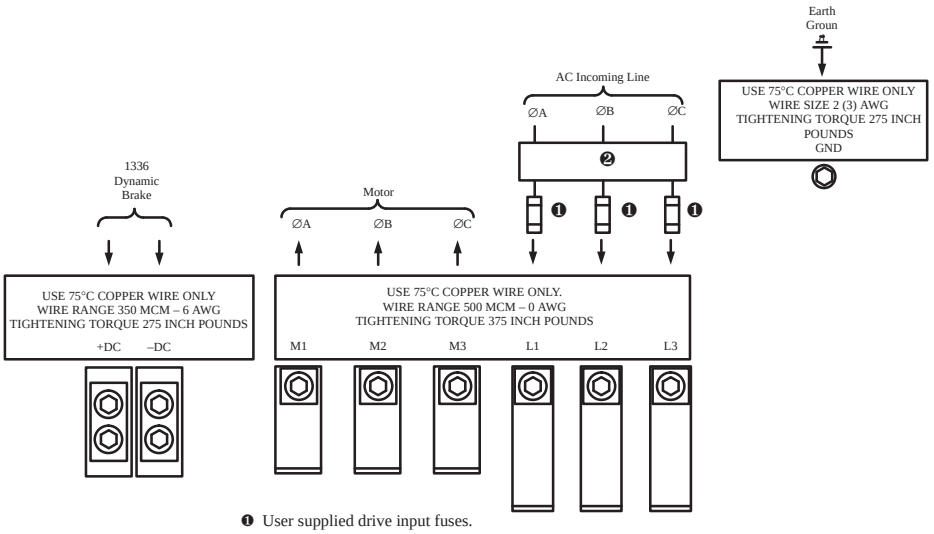
Frame	Power Rating Code	Drive Output Current (Amps)	Maximum Wire Size, mm[1] (AWG)	Maximum Torque, N•m (lb•in)
B003…B030	B003	6.0	16 (6)	2.26 (20)
	B005	9.6		
	B007	13.0		
	B010	17.0		
	B015	25.0		
	B020	33.0		
	B025	41.0		
	B030	48.0		
C003…C030	C003	4.3		
	C005	6.7		
	C007	9.9		
	C010	12.1		
	C015	19.0		
	C020	24.0		
	C025	30.0		
	C030	35.0		
B040…B050	B040	60	70 (2/0)	13.56 (120)
	B050	75		
C040…C050	C040	45		
	C050	57		
B075	B075	120		
C075	C075	85		
B100…B125	B100	150	185 (350 MCM)	31.08 (275)
	B125	180		
C100…C125	C100	109		
	C125	138		
B150…B200	B150	218	185 (350 MCM)[2] 240 (500 MCM)[3]	31.08 (275)[2] 42.38 (375)[3]
	B200	290		
C150…C200	C150	158		
	C200	210		

(1) Wire sizes given are the maximum/minimum sizes that TB1 will accept. These are not recommendations.
(2) +DC and –DC terminal block.
(3) M1 - M3 terminal block.

Figure 14 - 1336 CLASSIC Drive Power Terminal Blocks

Frame	Power Terminal Blocks
B003… B030 C003… C030	 ❶ User supplied drive input fuses. ❷ Motor disconnecting means including branch circuit, short circuit, and ground fault protection.
B040… B050 C040… C050	 ❶ User supplied drive input fuses. ❷ Motor disconnecting means including branch circuit, short circuit, and ground fault protection.

Frame	Power Terminal Blocks
B075… C075	 ❶ User supplied drive input fuses. ❷ Motor disconnecting means including branch circuit, short circuit, and ground fault protection.
B100… B125 C100… C125	 ❶ User supplied drive input fuses. ❷ Motor disconnecting means including branch circuit, short circuit, and ground fault protection.

Frame	Power Terminal Blocks
B150… B200 C150… C200	 ❶ User supplied drive input fuses. ❷ Motor disconnecting means including branch circuit, short circuit, and ground fault protection.

1336 PLUS Drives

Table 28 - 1336 PLUS Drive Power Terminal Block Specifications

Frame	Max/Min Wire Size, mm[(1)] (AWG)	Maximum Torque, N•m (lb•in)
A1…A4	5.3/0.8 (10/18)	1.8 (16)
B1	8.4/0.8 (8/18)	
B2	13.3/0.5 (6/20)	1.70 (15)
C	26.7/0.8 (3/18)	5.65 (50)
D	127.0/2.1 (250 MCM/14) 67.4/2.1 (00/14)[(2)]	6.00 (52) 6.00 (52)
E	253.0/2.1 (500 MCM/14)	10 (87)
F	303.6/2.1 (600 MCM/14)	23 (200)
G		

(1) Wire sizes given are the maximum/minimum sizes that TB1 will accept. These are not recommendations.

(2) Applies to 30 kW (40 Hp) 200…240V; 45 and 56 kW (60 and 75 Hp) 380…480V; and 56 kW (75 Hp) 500…600V drives only.

Figure 15 - 1336 PLUS Drive Power Terminal Block Locations

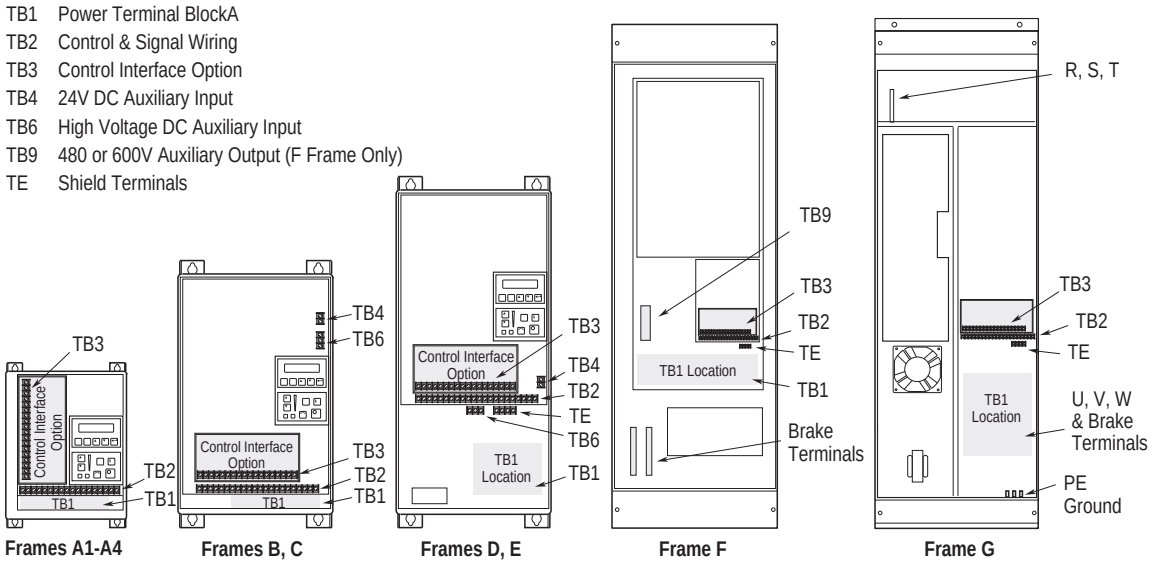
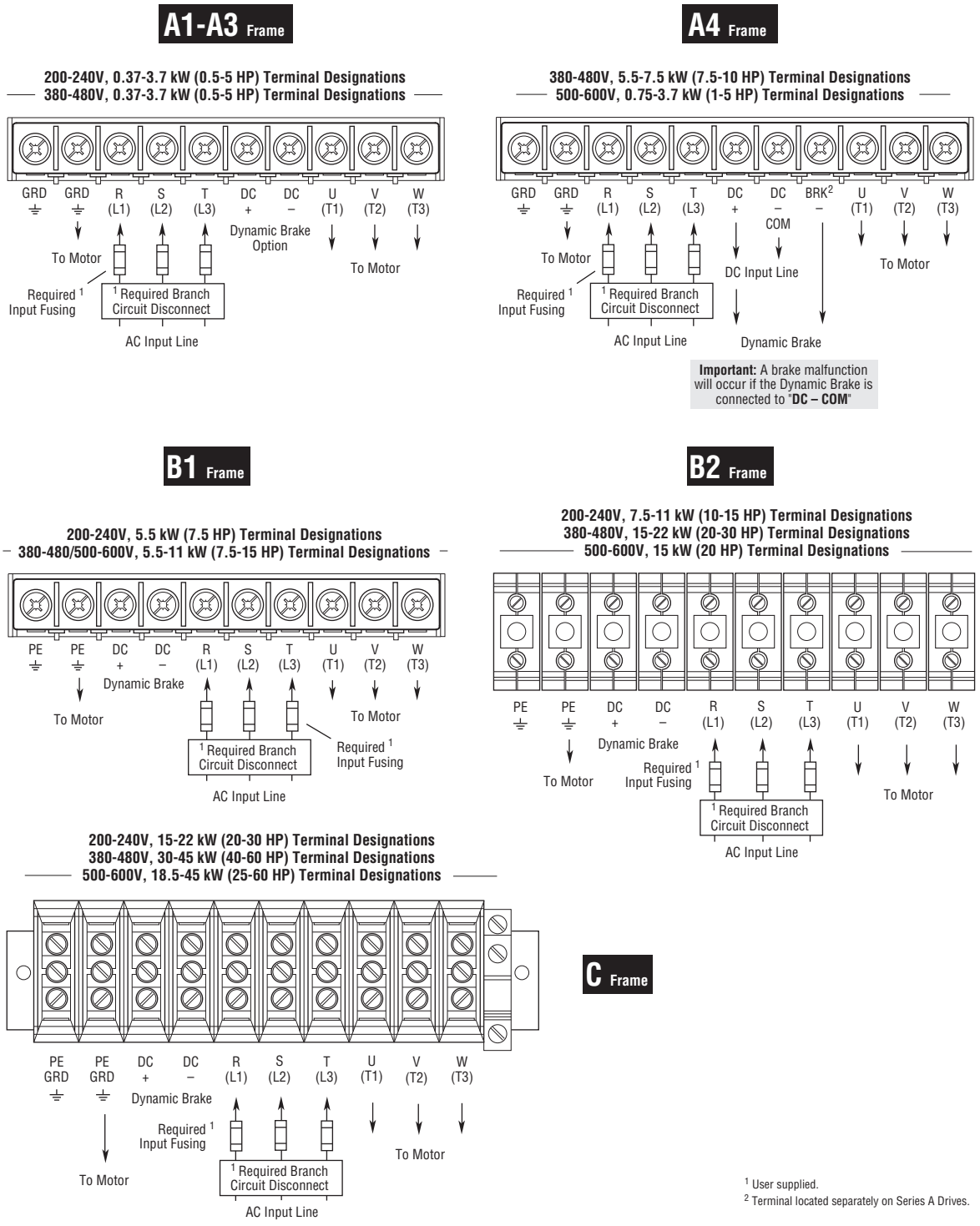


Figure 16 - 1336 PLUS Drive Power Terminal Blocks (A1…C)

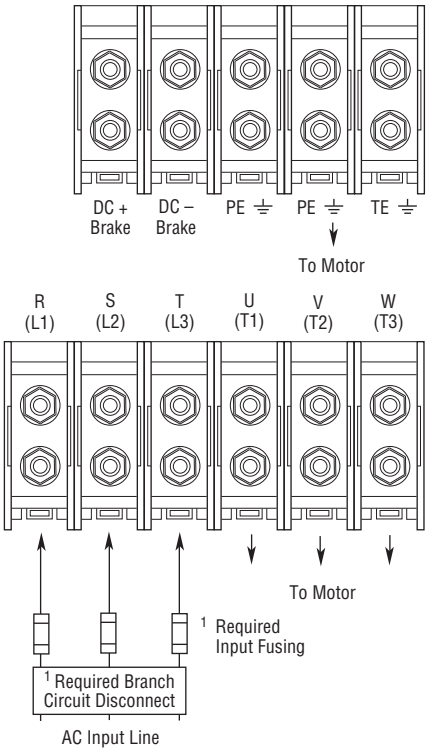


[1] User supplied.
[2] Terminal located separately on Series A Drives.

Figure 17 - 1336 PLUS Drive Power Terminal Blocks (D, E)

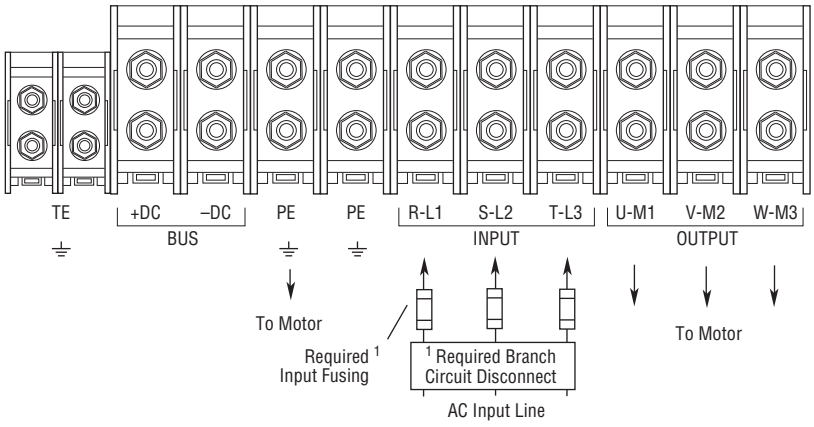
D Frame

200-240V, 30-45 kW (40-60 HP) Terminal Designations
380-480V, 45-112 kW (60-150 HP) Terminal Designations
500-600V, 56-112 kW (75-150 HP) Terminal Designations



E Frame

200-240V, 56-75 kW (75-100 HP) Terminal Designations
380-480V, 112-187 kW (150-250 HP) Terminal Designations
500-600V, 112-224 kW (150-300 HP) Terminal Designations

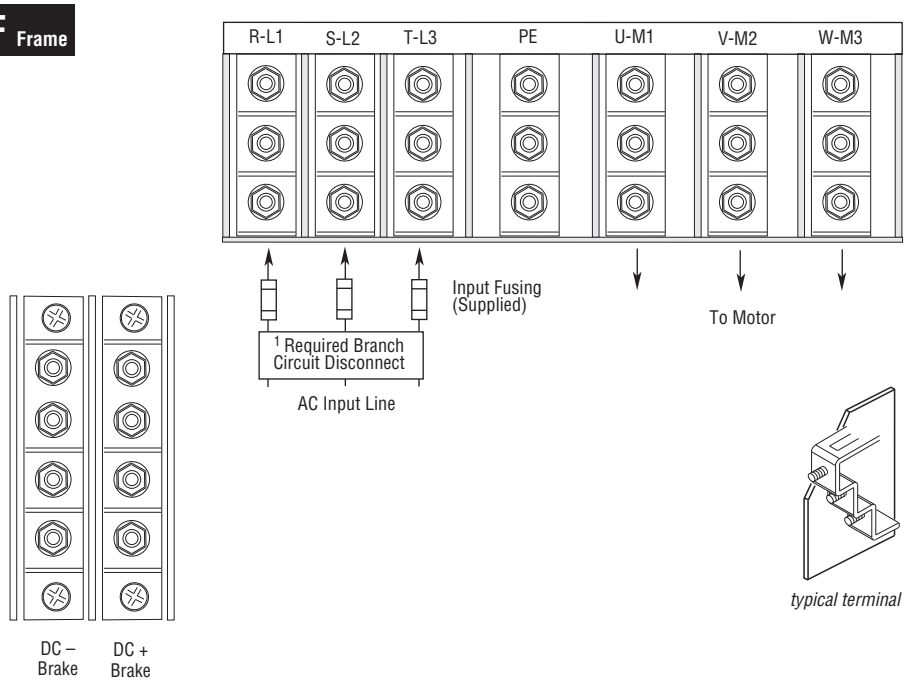


[1] User supplied.

Figure 18 - 1336 PLUS Drive Power Terminal Blocks (F, G)

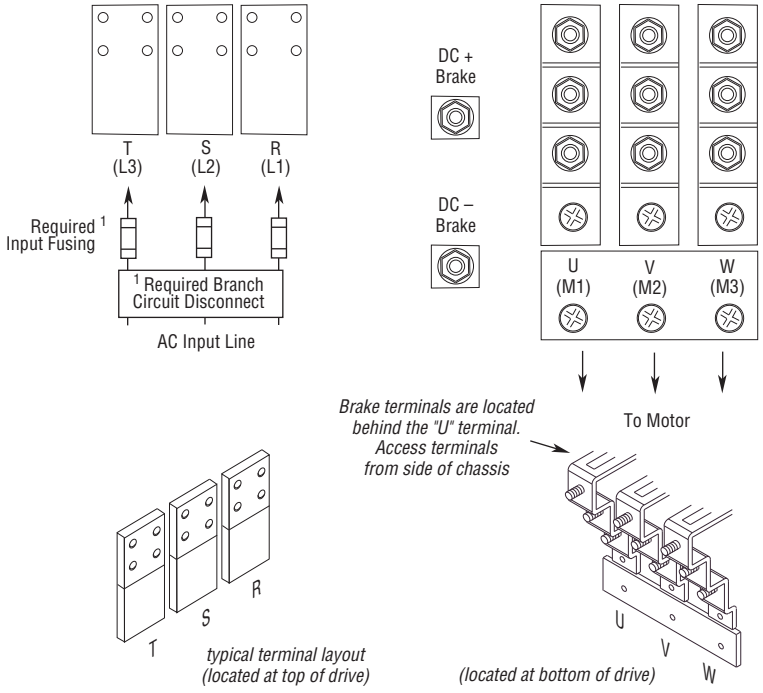
380-480V, 187-336 kW (250-450 HP) Terminal Designations

F Frame



380-480V, 224-448 kW (300-600 HP) Terminal Designations
500-600V, 187-448 kW (250-600 HP) Terminal Designations

G Frame



[1] User supplied.

1336 PLUS II Drives

Table 29 - 1336 PLUS II Drive Power Terminal Block Specifications

Frame	Max/Min Wire Size, mm[3] (AWG)	Maximum Torque, N•m (lb•in)
A1…A4	5.3/0.8 (10/18)	1.81 (16)
B1	8.4/0.8 (8/18)	
B2	13.3/0.5 (6/20)	1.70 (15)
C	26.7/0.8 (3/18)	5.65 (50)
D[1]	127.0/2.1 (250 MCM/14) 67.4/2.1 (00/14)[4]	6.00 (52) 6.00 (52)
E[2]	253.0/2.1 (500 MCM/14)	10 (87)
F	303.6/2.1 (600 MCM/14)	23 (200)
G		

(1) One TE terminal is present – maximum/minimum wire size is the same as other terminals.
(2) Two TE terminals are present – maximum/minimum wire size is the same as the D Frame terminal block.
(3) Wire sizes given are the maximum/minimum sizes that TB1 will accept. These are not recommendations.
(4) Applies to 30 kW (40 Hp) 200…240V; 45 and 56 kW (60 and 75 Hp) 380…480V; and 56 kW (75 Hp) 500…600V drives only.

Figure 19 - 1336 PLUS II Drive Power Terminal Block Locations

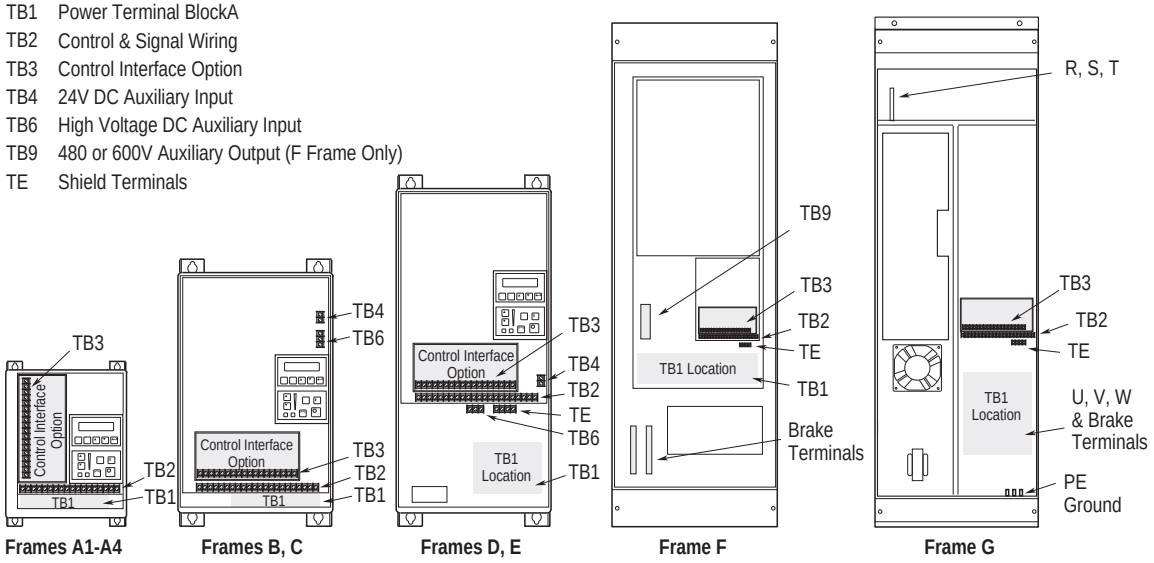
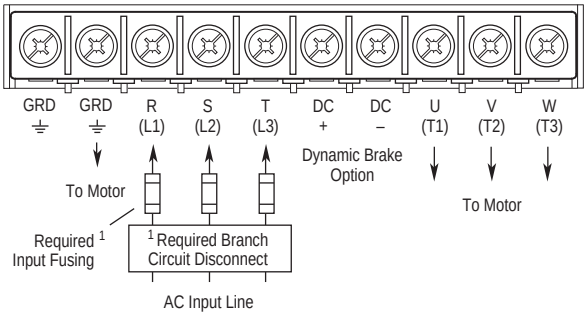


Figure 20 - 1336 PLUS II Drive Power Terminal Blocks (A1…C)

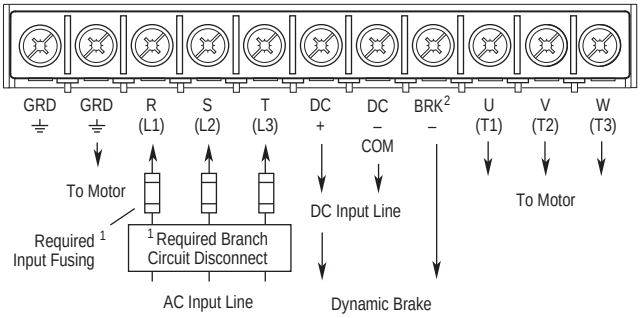
A1-A3 Frame

200-240V, 0.37-3.7 kW (0.5-5 HP) Terminal Designations
380-480V, 0.37-3.7 kW (0.5-5 HP) Terminal Designations



A4 Frame

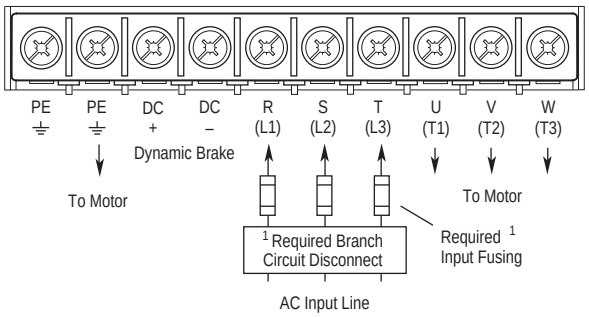
380-480V, 5.5-15 kW (7.5-20 HP) Terminal Designations
500-600V, 0.75-15 kW (1-20 HP) Terminal Designations



Important: A brake malfunction will occur if the Dynamic Brake is connected to "**DC – COM**"

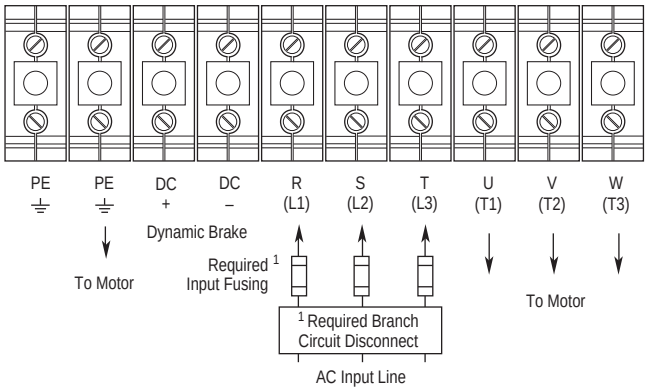
B1 Frame

200-240V, 5.5 kW (7.5 HP) Terminal Designations
380-480V, 11 kW (15 HP) Terminal Designations



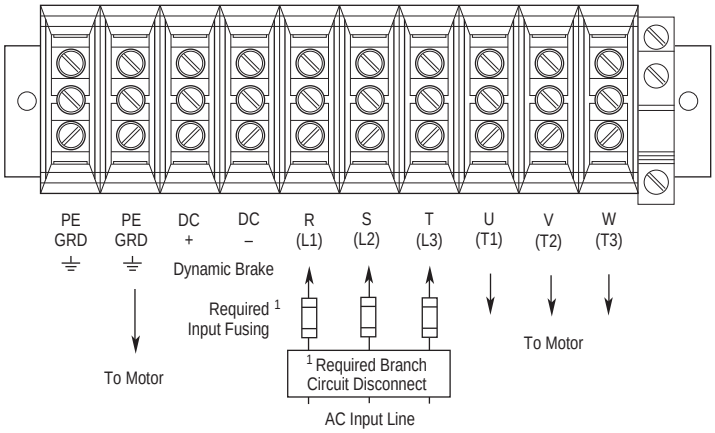
B2 Frame

200-240V, 7.5-11 kW (10-15 HP) Terminal Designations
380-480V, 15-22 kW (20-30 HP) Terminal Designations



200-240V, 15-22 kW (20-30 HP) Terminal Designations
380-480V, 30-45 kW (40-60 HP) Terminal Designations
500-600V, 18.5-45 kW (25-60 HP) Terminal Designations

C Frame

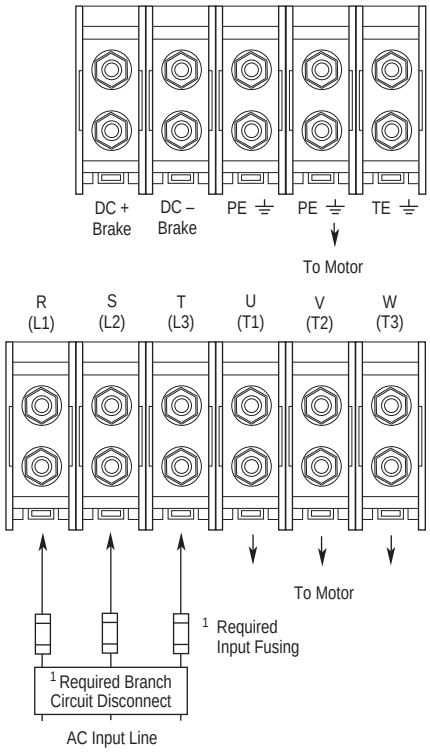


[1] User supplied.
[2] Terminal located separately on Series A Drives.

Figure 21 - 1336 PLUS II Drive Power Terminal Blocks (D, E)

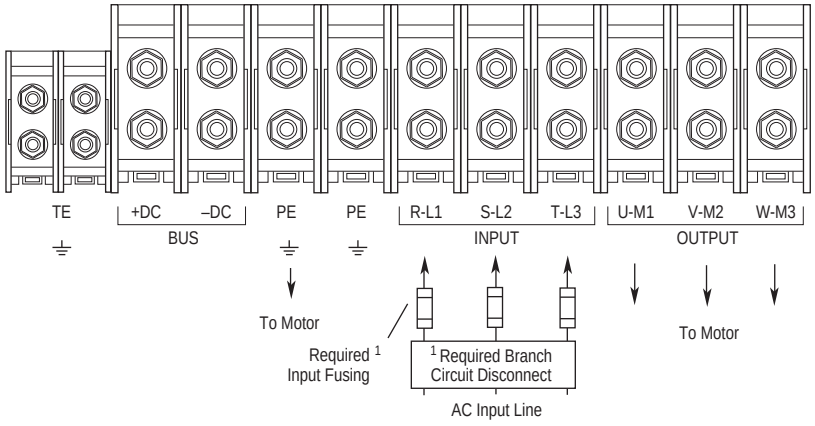
D Frame

200-240V, 30-45 kW (40-60 HP) Terminal Designations
380-480V, 45-112 kW (60-150 HP) Terminal Designations
500-600V, 56-93 kW (75-125 HP) Terminal Designations



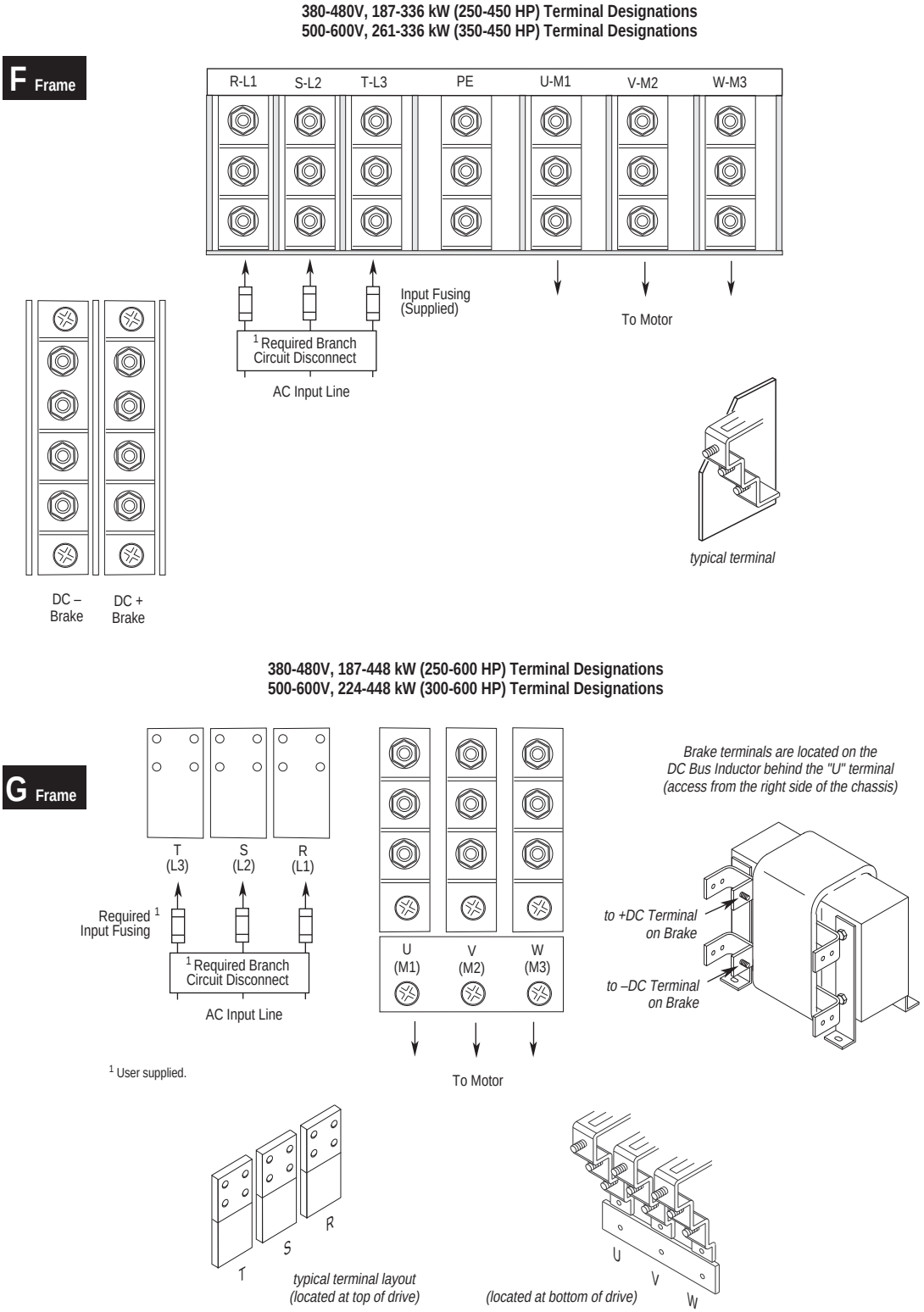
E Frame

200-240V, 56-93 kW (75-125 HP) Terminal Designations
380-480V, 112-187 kW (150-250 HP) Terminal Designations
500-600V, 112-224 kW (150-300 HP) Terminal Designations



[1] User supplied.

Figure 22 - 1336 PLUS II Drive Power Terminal Blocks (F, G)



1336 FORCE Drives

Table 30 - 1336 FORCE Drive Power Terminal Block Specifications

Frame	Max/Min Wire Size, mm[2] (AWG)	Maximum Torque, N•m (lb•in)
B	8.4/0.8 (8/18) 13.3/0.5 (6/20)	1.81 (16) 1.70 (15)
C	26.7/0.8 (3/18)	5.65 (50)
D [1]	127.0/2.1 (250 MCM/14) 67.4/2.1 (00/14) [3]	6.00 (52) 6.00 (52)
E [1]	253.0/2.1 (500 MCM/14)	10.00 (87)
F [1]	303.6/2.1 (600 MCM/14)	23.00 (200)
G [1]		
H [1]		

(1) These configurations of TB1 are stud-type terminations and require the use of lug-type connectors to terminate field-installed conductors. Lug kits are available for use with these configurations. Wire size used is determined by selecting the proper lug kit based on the drive catalog number. Refer to 1336 FORCE Adjustable Frequency AC Drive (Series B), publication 1336T-UM006, Chapter 2, for information on lug kits.

(2) Wire sizes given are the maximum/minimum sizes that TB1 will accept. These are not recommendations.

(3) Applies to 30 kW (40 hp) 200…240V; 45 and 56 kW (60 and 75 hp) 380…480V; and 56 kW (75 hp) 500…600V drives only.

Figure 23 - 1336 FORCE Drive Power Terminal Block Locations

TB1	Power Terminal Block
TB10, 11	Control & Signal Wiring
TB3	Control Interface Option
TB4	(For Factory Use Only)
TB6	(For Factory Use Only)
TB9	480V Output (F Frame Only)
TE	Shield Terminals

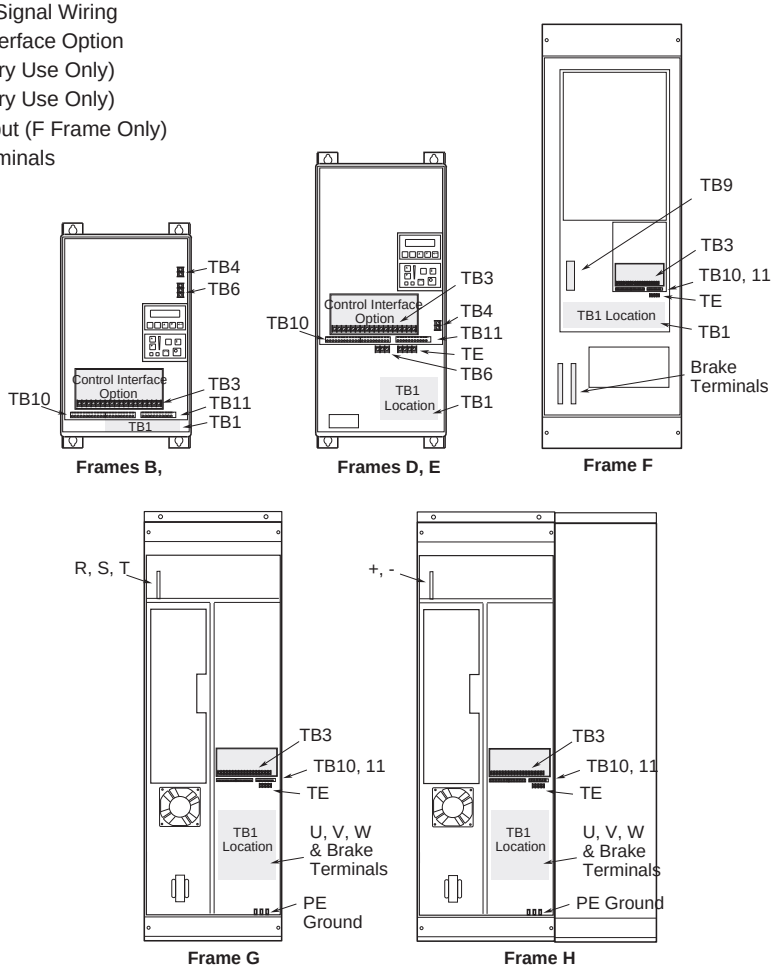
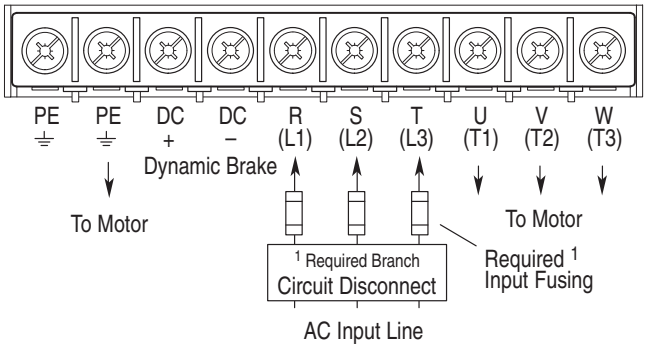


Figure 24 - 1336 FORCE Drive Power Terminal Blocks (B1, B2, C)

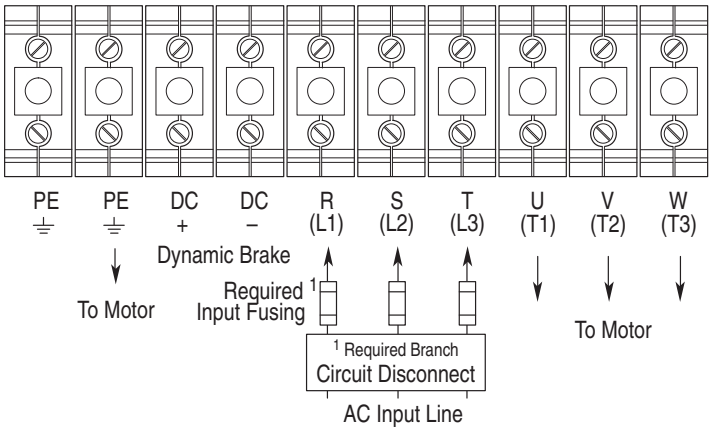
200–240V, 0.75–5.5 kW (1–7.5 HP) Terminal Designations
380–480/500–600V, 0.75–11 kW (1–15 HP) Terminal Designations

B1 Frame



200–240V, 7.5–11 kW (10–15 HP) Terminal Designations
380–480V, 15–22 kW (20–30 HP) Terminal Designations
500–600V, 15 kW (20 HP) Terminal Designations

B2 Frame



200–240V, 15–22 kW (20–30 HP) Terminal Designations
380–480V, 30–45 kW (40–60 HP) Terminal Designations
500–600V, 18.5–45 kW (25–60 HP) Terminal Designations

C Frame

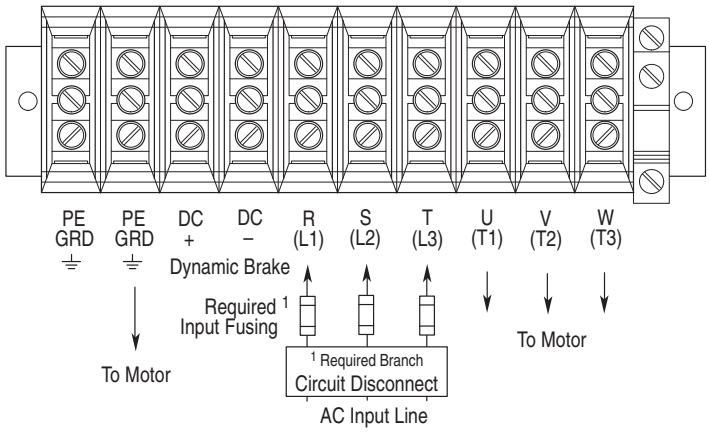


Figure 25 - 1336 FORCE Drive Power Terminal Blocks (D, E, F)

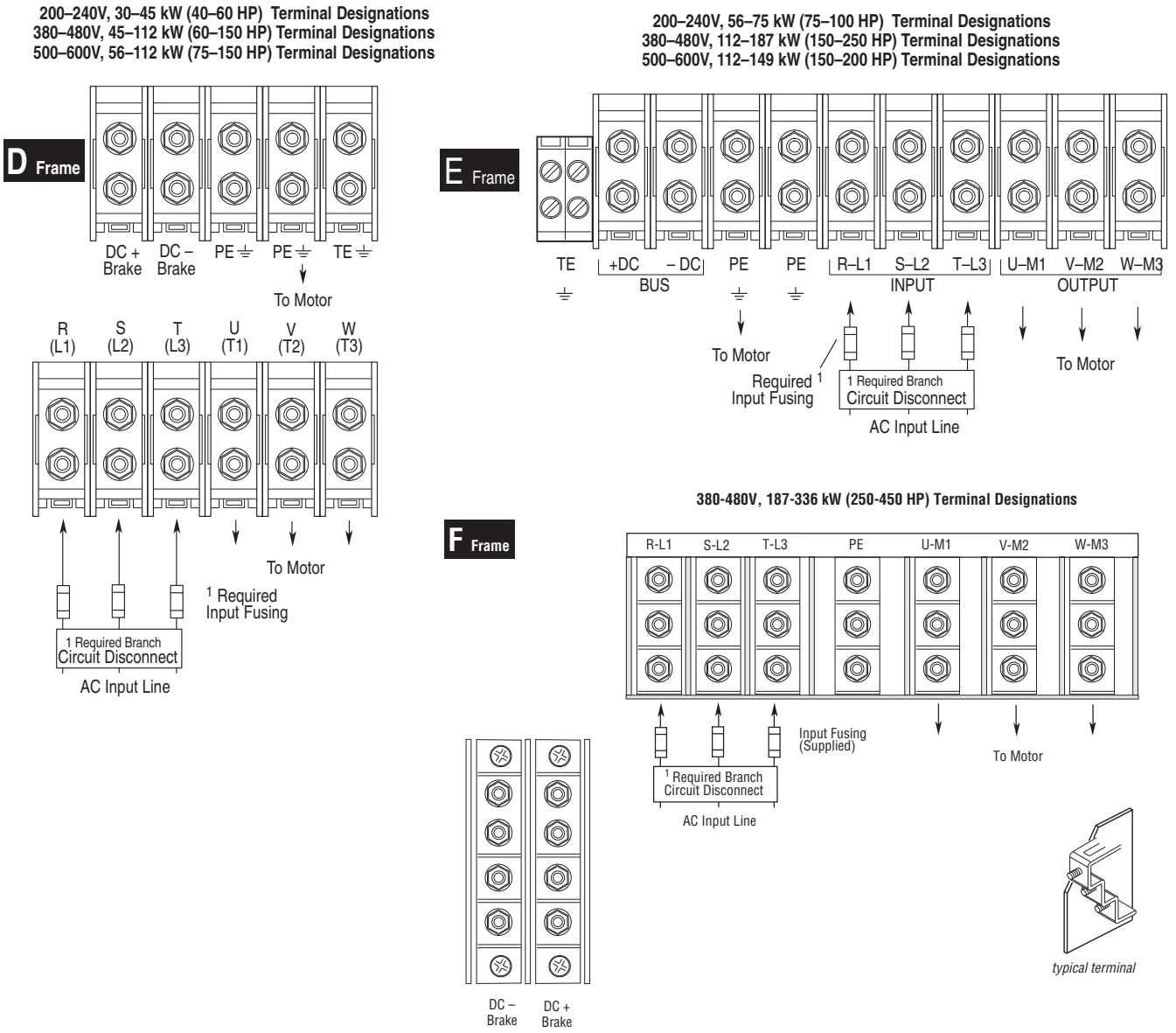
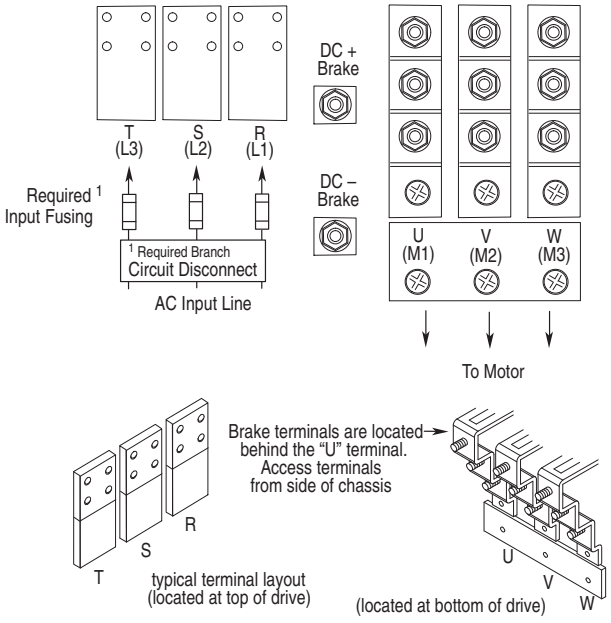


Figure 26 - 1336 FORCE Drive Power Terminal Blocks (G, H)

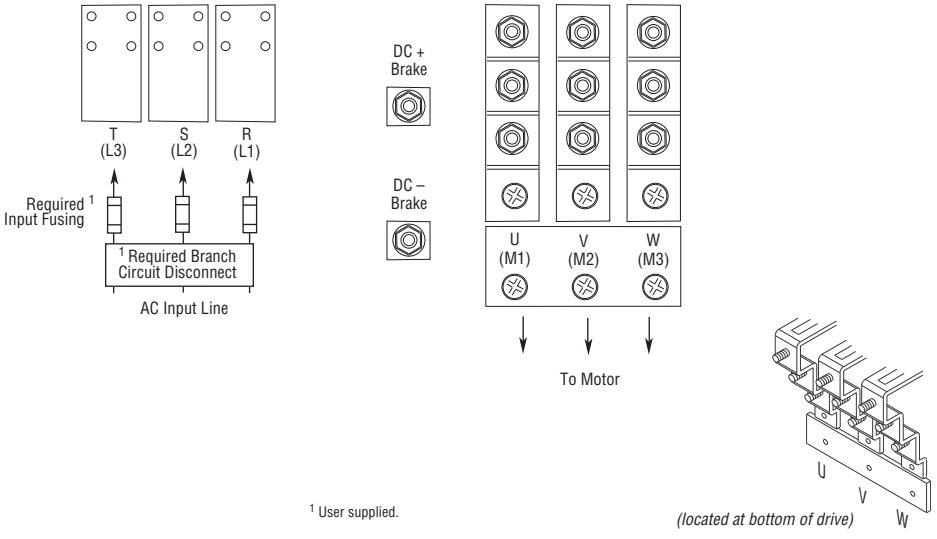
G Frame

380–480V, 224–448 kW (300–600 HP) Terminal Designations
500–600V, 187–485 kW (250–650 HP) Terminal Designations



H Frame

380-480V, 522-597 kW (700-800 HP) Terminal Designations
500-600V, 522-597 kW (700-800 HP) Terminal Designations



[1] User supplied.

1336 IMPACT Drives

Table 31 - 1336 IMPACT Drive Power Terminal Block Specifications

Frame	Max/Min Wire Size, mm (2) (AWG)	Maximum Torque, N•m (lb•in)
A1 – A4	5.3/0.8 (10/18)	1.81 (16)
B	8.4/0.8 (8/18) 13.3/0.5 (6/20)	1.81 (16) 1.70 (15)
C	26.7/0.8 (3/18)	5.65 (50)
D (1)	127.0/2.1 (250 MCM/14) 67.4/2.1 (00/14) (3)	6.00 (52) 6.00 (52)
E (1)	253.0/2.1 (500 MCM/14)	10.00 (87)
F (1)	303.6/2.1 (600 MCM/14)	23.00 (200)
G (1)		
H (1)		

(1) These configurations of TB1 are stud-type terminations and require the use of lug-type connectors to terminate field-installed conductors. Lug kits are available for use with these configurations. Wire size used is determined by selecting the proper lug kit based on the drive catalog number. Refer to 1336 IMPACT Adjustable Frequency AC Drive User Manual, publication 1336E-UM001, Chapter 4, for information on lug kits.

(2) Wire sizes given are the maximum/minimum sizes that TB1 will accept. These are not recommendations.

(3) Applies to 30 kW (40 hp) 200…240V; 45 and 56 kW (60 and 75 hp) 380…480V; and 56 kW (75 hp) 500…600V drives only.

Figure 27 - 1336 IMPACT Drive Power Terminal Block Locations (A1…A4)

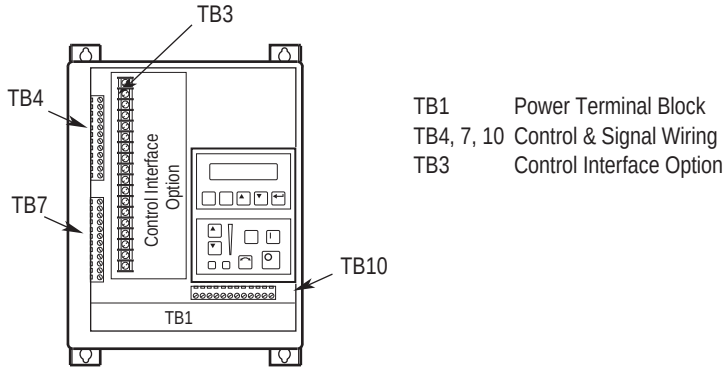
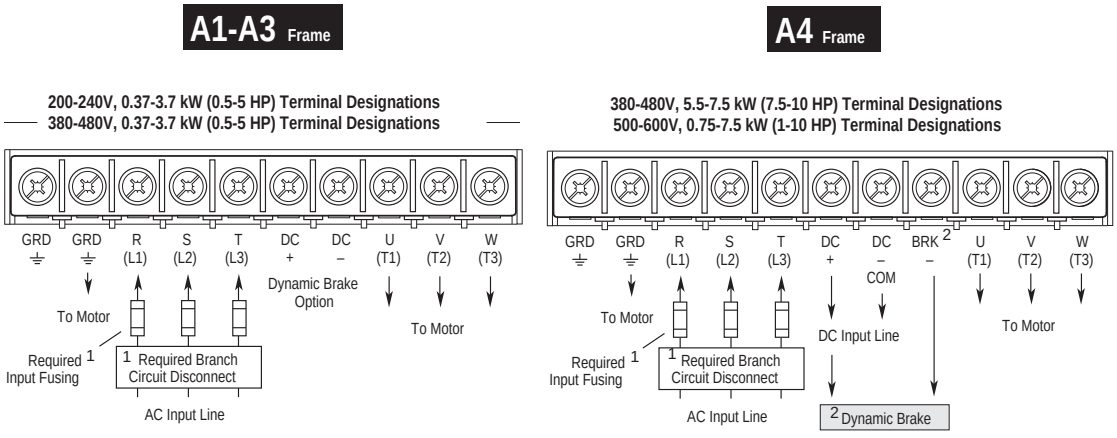


Figure 28 - 1336 IMPACT Drive Power Terminal Blocks (A1…A4)



1 User supplied.

2 Before wiring your dynamic brake for the A4 frame, double check the terminals. You should attach the + terminal on the brake to the DC+ terminal on your drive and the - terminal on the brake to the BRK - terminal on your drive. If your BRK - terminal is labeled VBUS -, connect the - terminal on the brake to the VBUS - terminal on your drive.

Figure 29 - 1336 IMPACT Drive Power Terminal Block Locations (B…H)

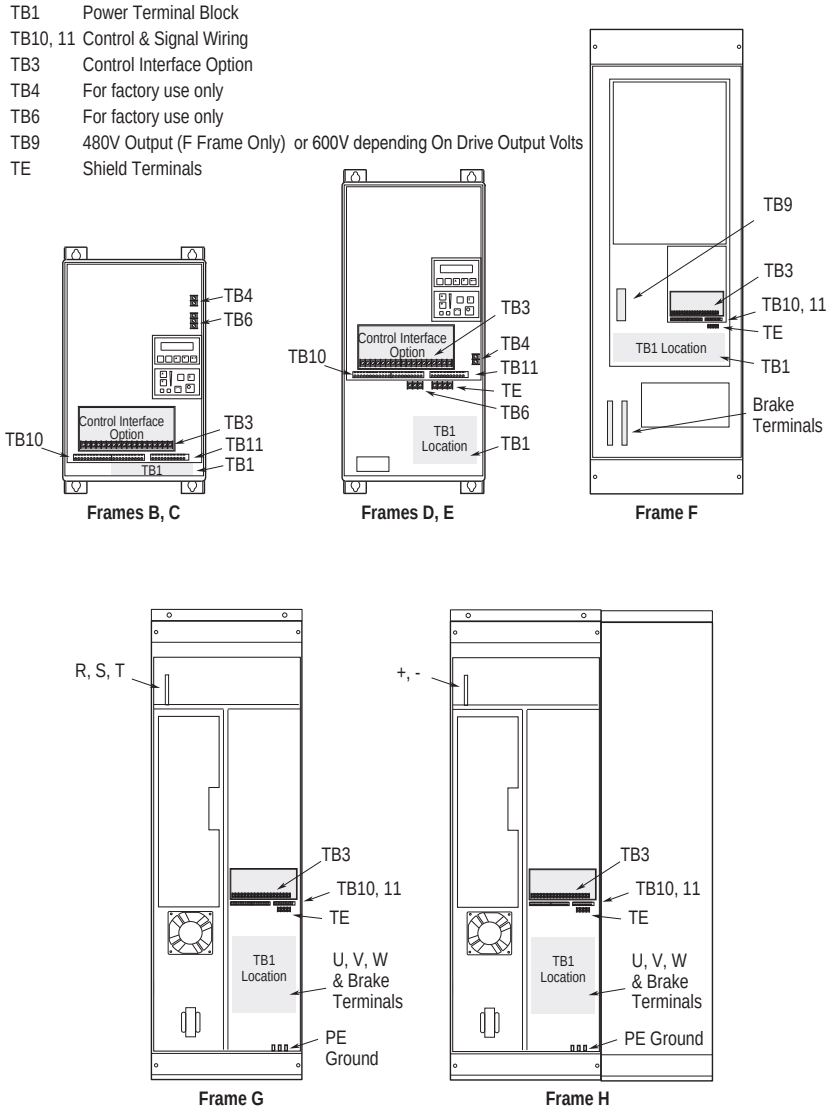
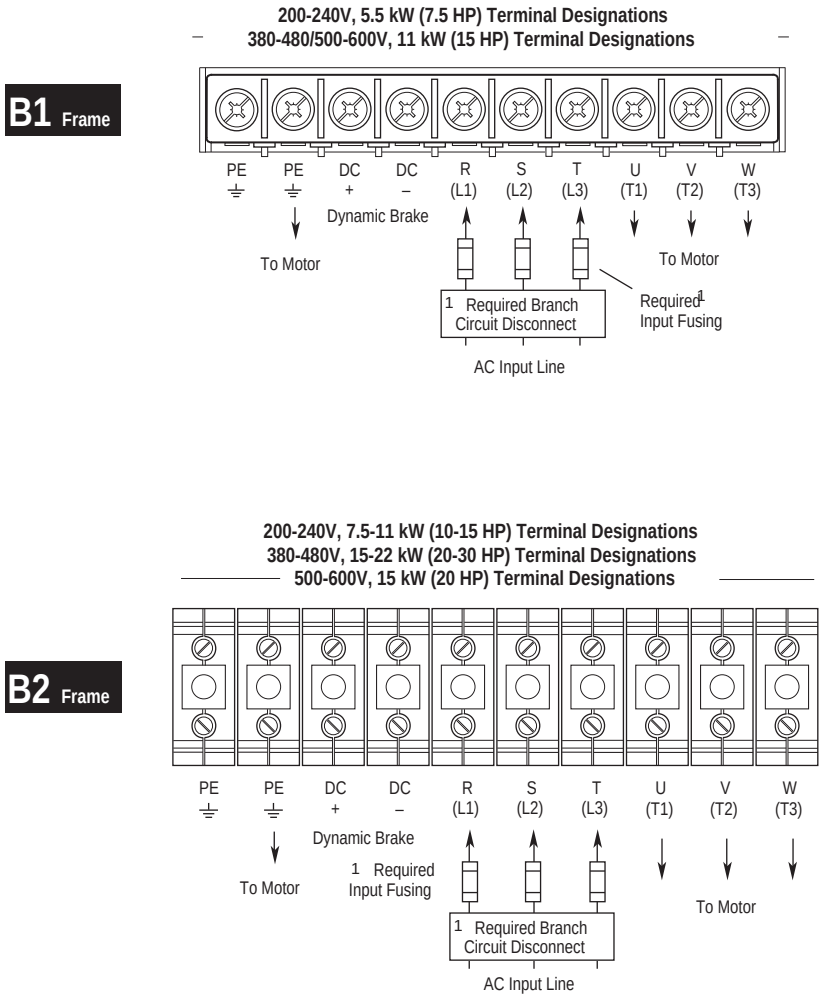


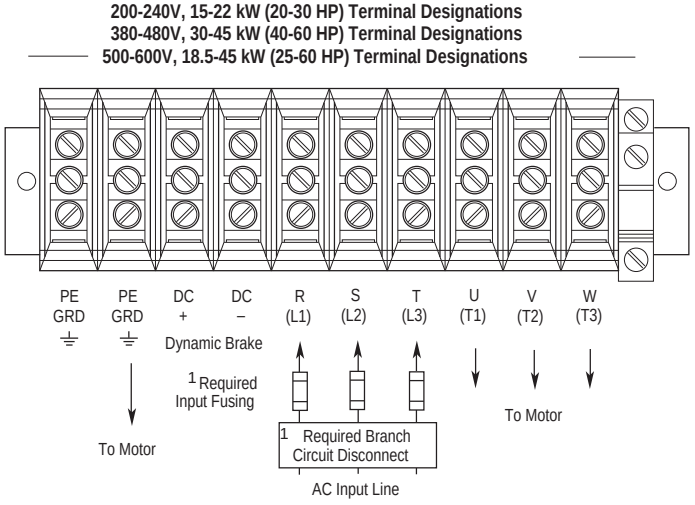
Figure 30 - 1336 IMPACT Drive Power Terminal Blocks (B1, B2)



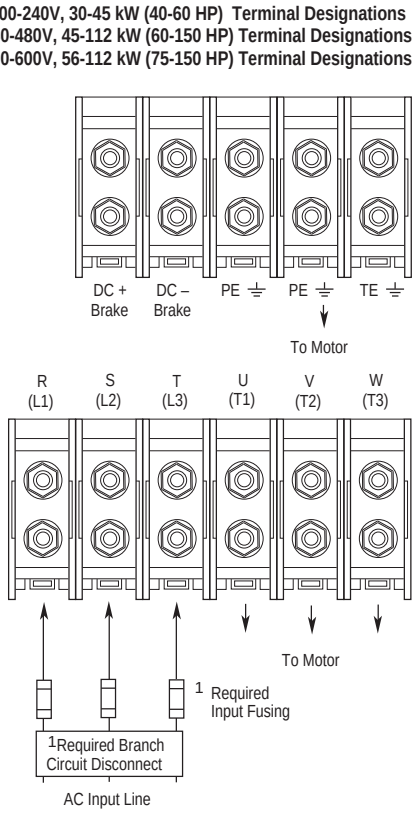
1 User supplied.

Figure 31 - 1336 IMPACT Drive Power Terminal Blocks (C, D)

C Frame

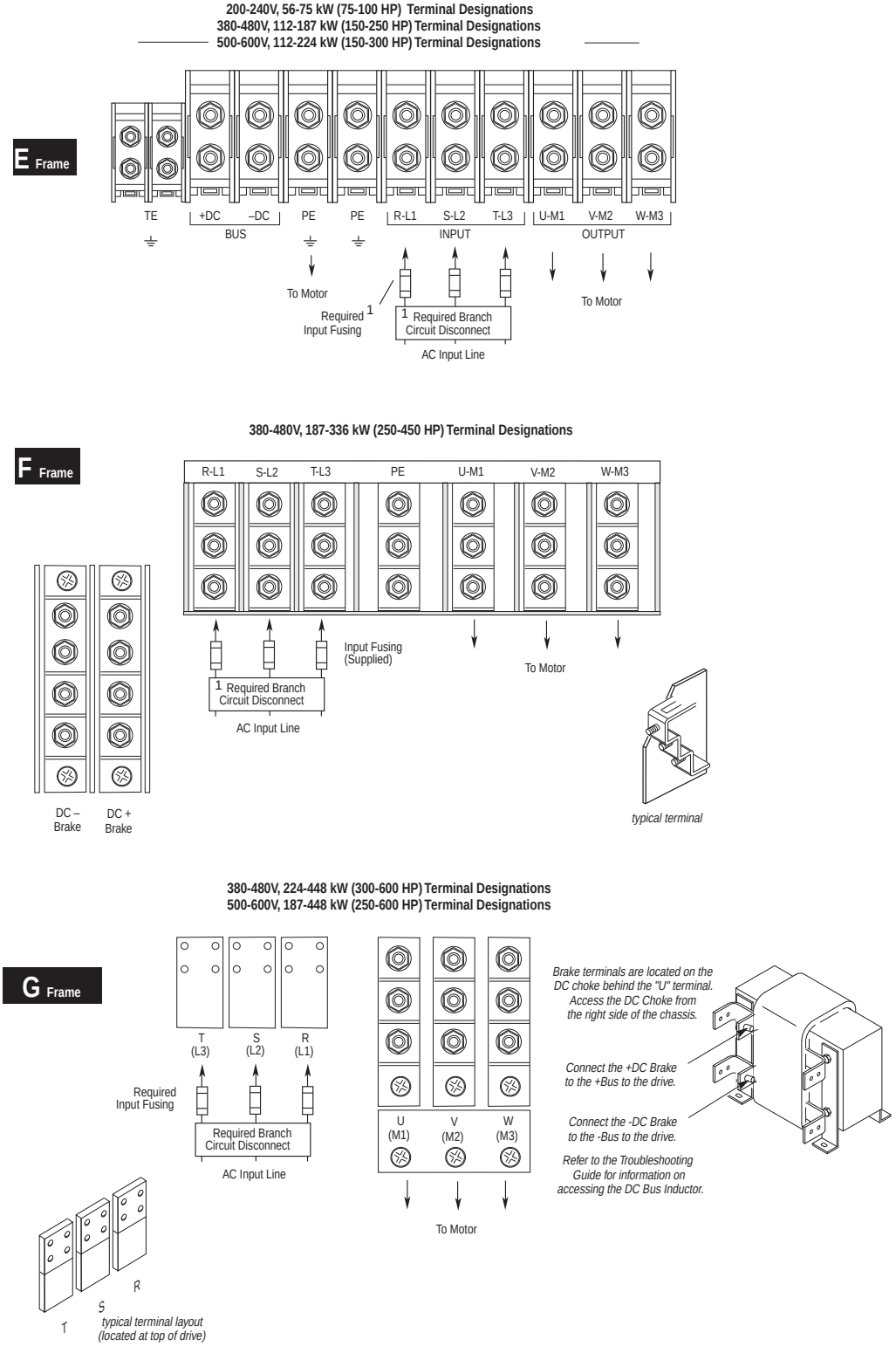


D Frame



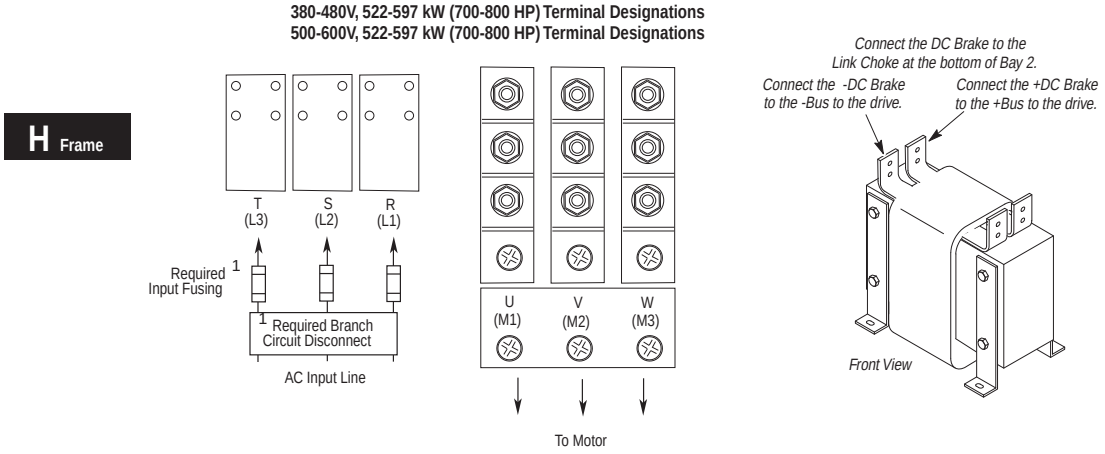
1 User supplied.

Figure 32 - 1336 IMPACT Drive Power Terminal Blocks (E, F, G)



1 User supplied.

Figure 33 - 1336 IMPACT Drive Power Terminal Blocks (H)



1 User supplied.

PowerFlex 750-Series Drives

Table 32 - PowerFlex 750-Series Wall Mount Frames 1…5 Power Terminal Block Specifications

Frame	Wire Size Range (1) (2)		Strip Length	Recommended Torque	Recommended Tool(s)
	Max	Min			
1	4.0 mm^2 (10 AWG)	0.2 mm^2 (24 AWG)	8.0 mm (0.31 in.)	0.57 N•m (5 lb•in)	#1 flat screwdriver
2	4.0 mm^2 (10 AWG)	0.2 mm^2 (24 AWG)	8.0 mm (0.31 in.)	0.57 N•m (5 lb•in)	#1 flat screwdriver
3	16.0 mm^2 (6 AWG)	0.5 mm^2 (20 AWG)	10.0 mm (0.39 in.)	1.2 N•m (10.6 lb•in)	#2 flat screwdriver
4	25.0 mm^2 (3 AWG)	2.5 mm^2 (14 AWG)	10.0 mm (0.39 in.)	2.7 N•m (24 lb•in)	#2 Pozidrive 492-C Phillips 0.25 in. flat screwdriver
5	35.0 mm^2 (1 AWG)	10.0 mm^2 (8 AWG)	12.0 mm (0.5 in.)	4.0 N•m (35 lb•in)	#2 Pozidrive 492-C Phillips 0.25 in. flat screwdriver

(1) Maximum/minimum wire sizes that the terminal block will accept–these are not recommendations.
(2) Terminal blocks are designed to accept a single wire.

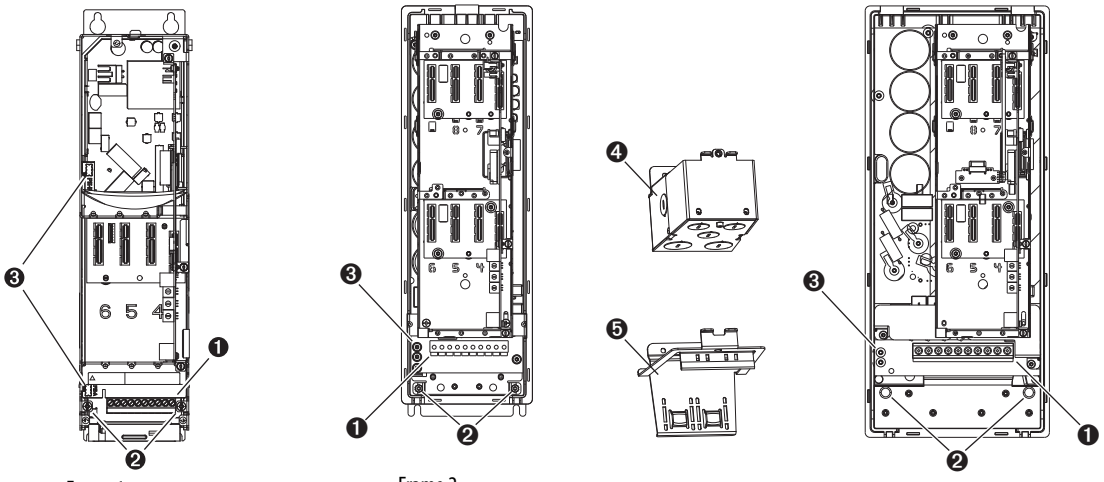
Table 33 - PowerFlex 750-Series Wall Mount Frames 6 and 7 Terminal Block Specifications

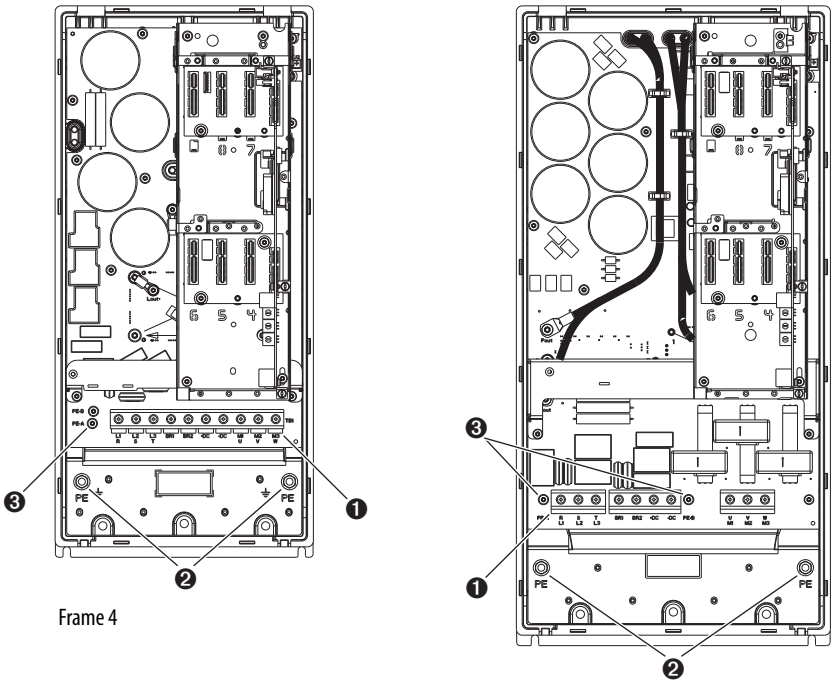
Frame	Max Lug Width	Recommended Torque	Terminal Bolt Size	Recommended Tool
6	34.6 mm (1.36 in.)	11.3 N•m (100 lb•in)	M8 x 1.25	13 mm hex socket
7	43.5 mm (1.71 in.)	11.3 N•m (100 lb•in)	M8 x 1.25	13 mm hex socket

Table 34 - PowerFlex 750-Series Wall Mount Frames 1…7 PE Grounding Stud Specifications

Frame	Recommended Torque	Terminal Bolt Size	Recommended Tool
1	1.36 N•m (12 lb•in)	M4	2-T hexalobular (Torx) #1 flat screwdriver
2	1.36 N•m (12 lb•in)	M4	7 mm hex deep-socket
3	3.4 N•m (30 lb•in)	M6	10 mm hex deep-socket
4	3.4 N•m (30 lb•in)	M6	10 mm hex deep-socket
5	3.4 N•m (30 lb•in)	M6	10 mm hex deep-socket
6	11.3 N•m (100 lb•in)	M8	13 mm hex socket
7	11.3 N•m (100 lb•in)	M8	13 mm hex socket

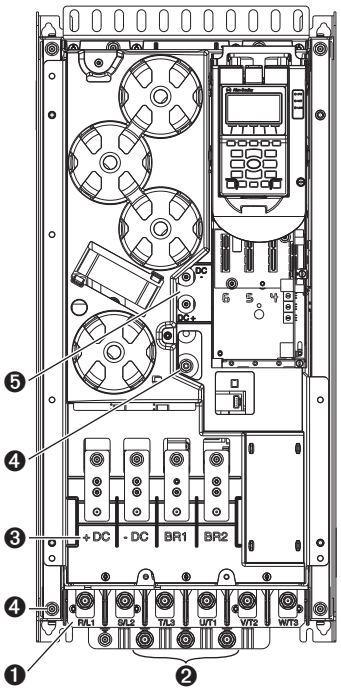
Figure 34 - PowerFlex 750-Series Wall Mount Frames 1…5
Typical Terminal Block Location and Termination Points



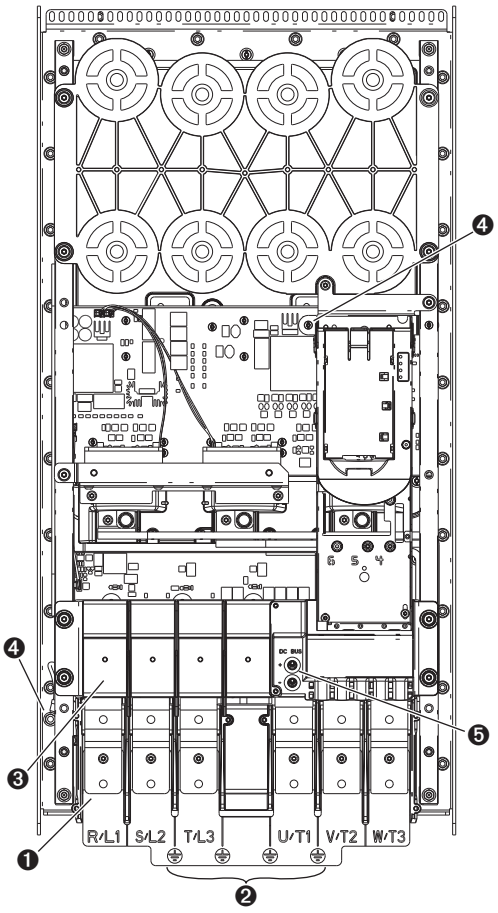


No.	Name	Description
❶	Power terminal block	R/L1, S/L2, T/L3, BR1, BR2, +DC, -DC, U/T1, V/T2, W/T3
❷	PE grounding studs	Terminating point to chassis ground for incoming AC line and motor shields
❸	PE-A and PE-B	MOV and CMC jumper screws
❹	Optional NEMA/UL Type 1 conduit box	Terminating point to chassis ground for incoming AC line, motor shields, and control wire shields
❺	Optional EMC plate	Terminating point to chassis ground for incoming AC line, motor shields, and control wire shields

Figure 35 - PowerFlex 750-Series Wall Mount Frames 6 & 7
Typical Terminal Block Location and Termination Points



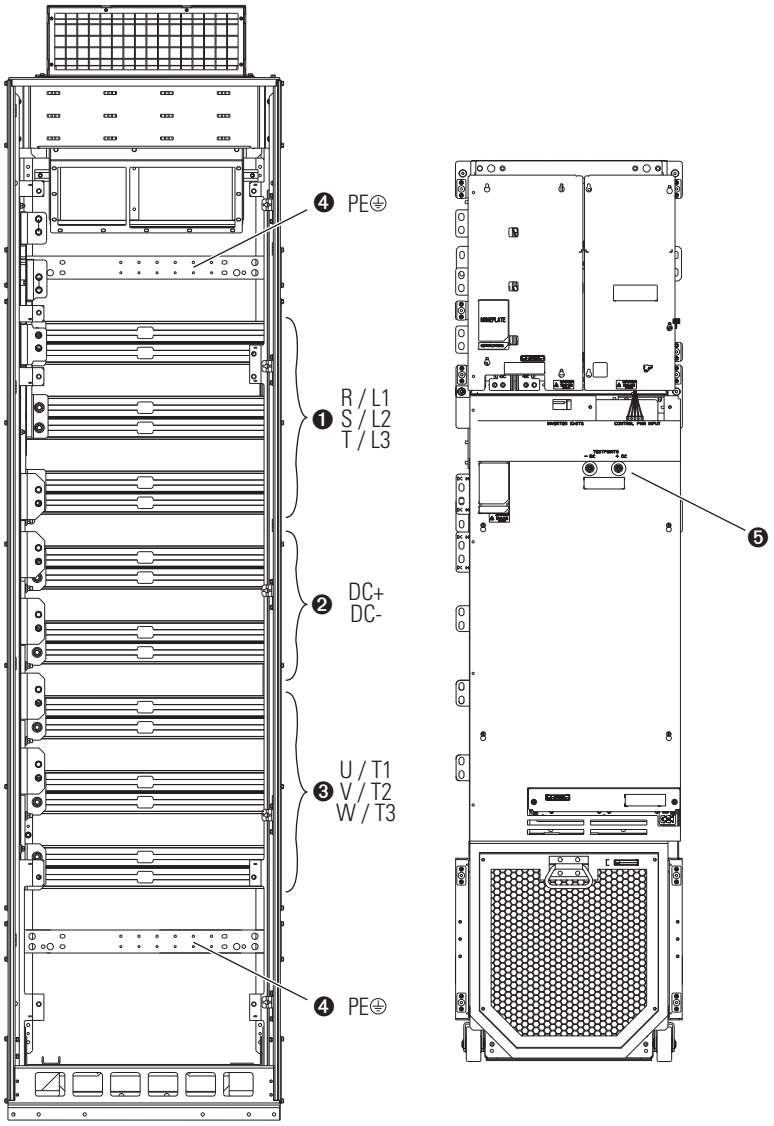
Frame 6



Frame 7

No.	Name	Description
❶	Power terminals	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3
❷	PE grounding studs	Terminating point to chassis ground for incoming AC line and motor shield
❸	DC bus and brake terminals	+DC, -DC, BR1, BR2
❹	PE-A and PE-B	MOV and CMC jumper wires
❺	DC+ and DC-	Bus voltage test points

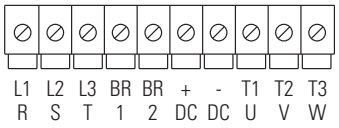
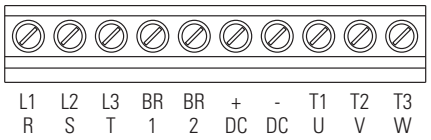
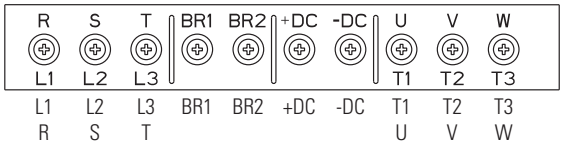
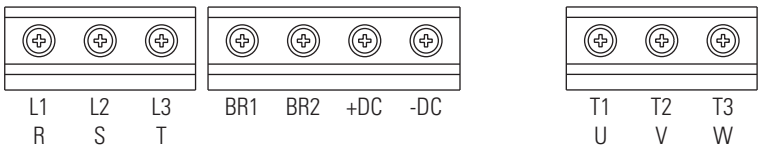
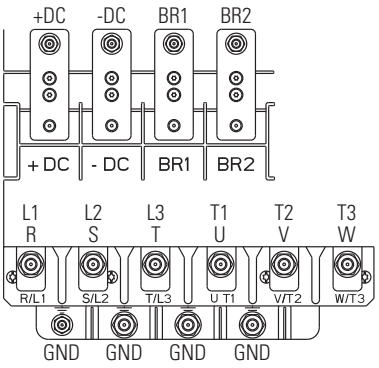
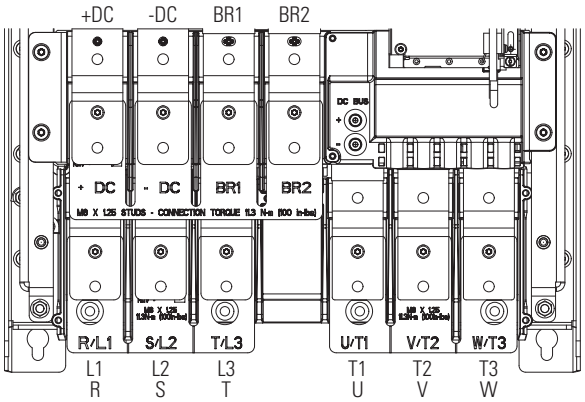
Figure 36 - PowerFlex 755 Drive Frame Floor Mount 8 and 9 Power Terminal Bus Bar Locations



Frame 8 and Frame 9

No.	Name	Description
❶	Power bus	R/L1, S/L2, T/L3
❷	DC bus	DC+, DC- (requires field installed kit 20-750-BUS1-F8)
❸	Power bus	U/T1, V/T2, W/T3
❹	PE grounding bar	Terminating point to chassis ground for incoming AC line and motor shield
❺	DC+ and DC-	Bus voltage test points

Figure 37 - PowerFlex 750-Series AC Input Power Terminal Blocks

Frame	Power Terminal Blocks
1, 2	
3	
4	
5	
6 (1)	
7 (2)	

(1) DC bus terminals are optional on Frame 6 and 7 drives: catalog number position 5.

(2) Dynamic brake resistor terminals are optional on Frame 6 and 7 drives: catalog number position 12.
Refer to PowerFlex 750-Series Drives Catalog Numbers on page 34.

Table 35 - PowerFlex 750-Series Wall Mount Frames 1…7 Power Terminal Block Designations

Terminal	Description	Notes
+DC	DC Bus (+)	DC input power or dynamic brake chopper
-DC	DC Bus (–)	DC input power or dynamic brake chopper
BR1	DC Brake (+)	Dynamic brake resistor connection (+)
BR2	DC Brake (–)	Dynamic brake resistor connection (–)
U	U (T1)	Motor connections (1)
V	V (T2)	
W	W (T3)	
R	R (L1)	AC line input power
S	S (L2)	
T	T (L3)	
PE / ⏚	PE ground	Terminating point to chassis ground for incoming AC line and motor shield.

(1) **Important:** Motors with NEMA MG1 Part 31.40.4.2 inverter grade insulation systems are recommended. If you intend to connect a motor that is not rated inverter grade, refer to Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives, publication DRIVES-IN001, for recommendations.

PowerFlex 755 Drive Floor Mount Frame 8. . . 10 Power Wiring Options

The following table describes the cabling options available for each floor mount frame 8...10 drive enclosure.

	0	X
Adequate Spacing Available conduit plates provide adequate spacing for typical cabling.	**Possible – Evaluation is Required** Available conduit plates must be evaluated to determine if cabling will fit.	**Not Possible – Insufficient Spacing** Conduit plates are not available for the specified configuration.

Frame	Enclosure Rating	Enclosure Code	Cabinet Layout	Top Entry/ Top Exit	Top Entry/ Bottom Exit	Bottom Entry/ Top Exit	Bottom Entry/ Bottom Exit
8	IP20, NEMA/UL Type 1	B	600 mm Drive Cabinet	X		X	0
		L, P, W	800 mm Drive Cabinet	0		0	
		B	600 mm Drive with Power Option Bay			X	0
		L, P, W	800 mm Drive with Power Option Bay			0	
		B	600 mm Drive with Wiring Bay				
		L, P, W	800 mm Drive with Wiring Bay				
		B	600 mm Drive with Power Option and Wiring Bays				
		L, P, W	800 mm Drive with Power Option Bay and Wiring Bays				
	IP54, NEMA 12	J, K, Y	800 mm Drive Cabinet	X	X	X	
		J, K, Y	800 mm Drive with Power Option Bay	X		0	0
		J, K, Y	800 mm Drive with Wiring Bay				
		J, K, Y	800 mm Drive with Power Option Bay and Wiring Bays				
9	IP20, NEMA/UL Type 1	B	600 mm Drive Cabinet	0		0	0
		L, P, W	800 mm Drive Cabinet				
		B	600 mm Drive with Power Option Bay			X	
		L, P, W	800 mm Drive with Power Option Bay			0	
		B	600 mm Drive with Wiring Bay				
		L, P, W	800 mm Drive with Wiring Bay				
		B	600 mm Drive with Power Option and Wiring Bays				
		L, P, W	800 mm Drive with Power Option Bay and Wiring Bays				
	IP54, NEMA 12	J, K, Y	800 mm Drive Cabinet	X	X	X	
		J, K, Y	800 mm Drive with Power Option Bay	0		0	
		J, K, Y	800 mm Drive with Wiring Bay				
		J, K, Y	800 mm Drive with Power Option Bay and Wiring Bays				
10	IP20, NEMA/UL Type 1	B	600 mm Drive Cabinet	0		0	0
		L, P, W	800 mm Drive Cabinet			0	
		B	600 mm Drive with Power Option Bay	X		X	
		L, P, W	800 mm Drive with Power Option Bay	0		0	
		B	600 mm Drive with Wiring Bay				
		L, P, W	800 mm Drive with Wiring Bay				
		B	600 mm Drive with Power Option and Wiring Bays				
		L, P, W	800 mm Drive with Power Option Bay and Wiring Bays			X	
	IP54, NEMA 12	J, K, Y	800 mm Drive Cabinet	X	X	X	
		J, K, Y	800 mm Drive with Power Option Bay	X	0	0	
		J, K, Y	800 mm Drive with Wiring Bay	0			
		J, K, Y	800 mm Drive with Power Option Bay and Wiring Bays				

Control Terminal Comparison

Input/Output

The 1336-Series drives have fixed input/output (I/O) and various **L** option I/O cards. Refer to the respective 1336 drive user manual for information on the various **L** option cards for that particular drive, as well as input mode programming and functionality with wiring examples. The PowerFlex 753 contains some I/O resident on the main control board and also uses optional I/O. The PowerFlex 755 drive contains one digital input (DI) on the main control board and uses the optional 750-Series I/O modules for additional I/O.

The PowerFlex 753 embedded I/O control board has three 24V DC and one 115V AC digital inputs. The PowerFlex 755 embedded ethernet control board has one digital input which supports either 24V DC or 115V AC.

- If your 1336-Series drive utilizes more than three 24V DC digital inputs, we recommend you migrate the I/O using one of the PowerFlex 750-Series 24V DC I/O option modules.
- If your 1336-Series drive utilizes more than one 115V AC digital input, we recommend you migrate the I/O using one of the PowerFlex 750-Series 115V AC I/O option modules.

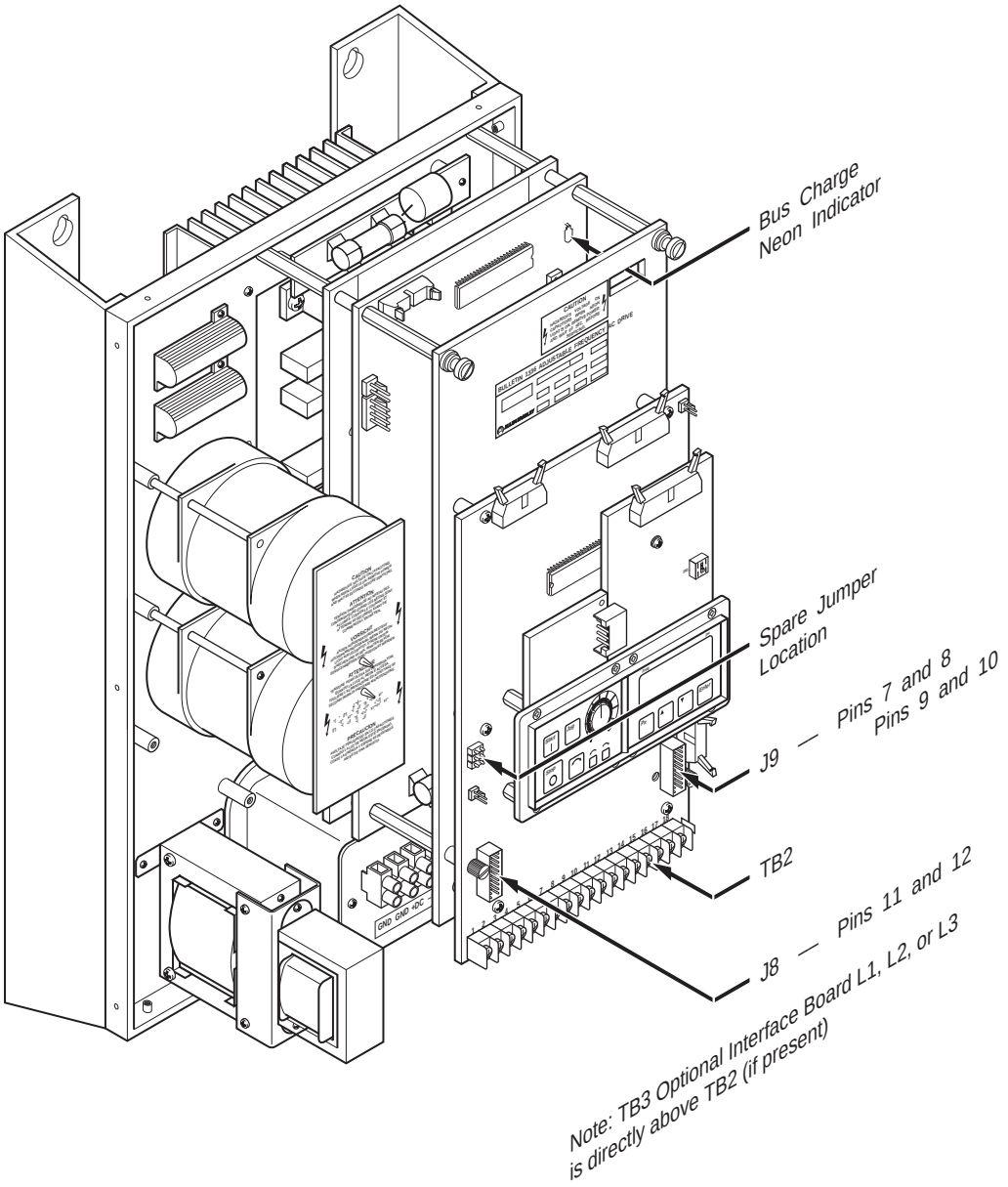
IMPORTANT Because of the size differences in wire gauge tolerances and control terminal block terminals, as well as overall terminal block locations between the 1336-Series and PowerFlex 750-Series drives, a good practice is to install remote terminal blocks when you migrate from a 1336-Series drive to a PowerFlex 750-Series drive. Rockwell Automation offers a wide range of terminal blocks. Refer to the online Essential Components catalog located at http://www.ab.com/catalogs/ for more information.

1336 CLASSIC Drives Main Control Board I/O

Terminal block TB2 is located at the bottom of the main control board. TB2 is an 18-position terminal block with markings of 1...18.

Terminal block TB3 is a 12-position terminal block located on optional interface boards L1, L2, or L3 directly above terminal block TB2. If either L1, L2, or L3 is present, refer to Figure 40 on page 104 for wiring details.

Figure 38 - 1336 CLASSIC Drive Terminal Blocks TB2 and TB3 Locations



The drive is capable of operating from an optional local or remote control panel with minimum connections to terminal block TB2. When required, external operator elements may be connected to provide additional drive control. Additional drive control functions and status outputs are also available for use at TB2 as detailed on the following pages.

Figure 39 - 1336 CLASSIC Drive Terminal Block TB2 Control and Signal Wiring

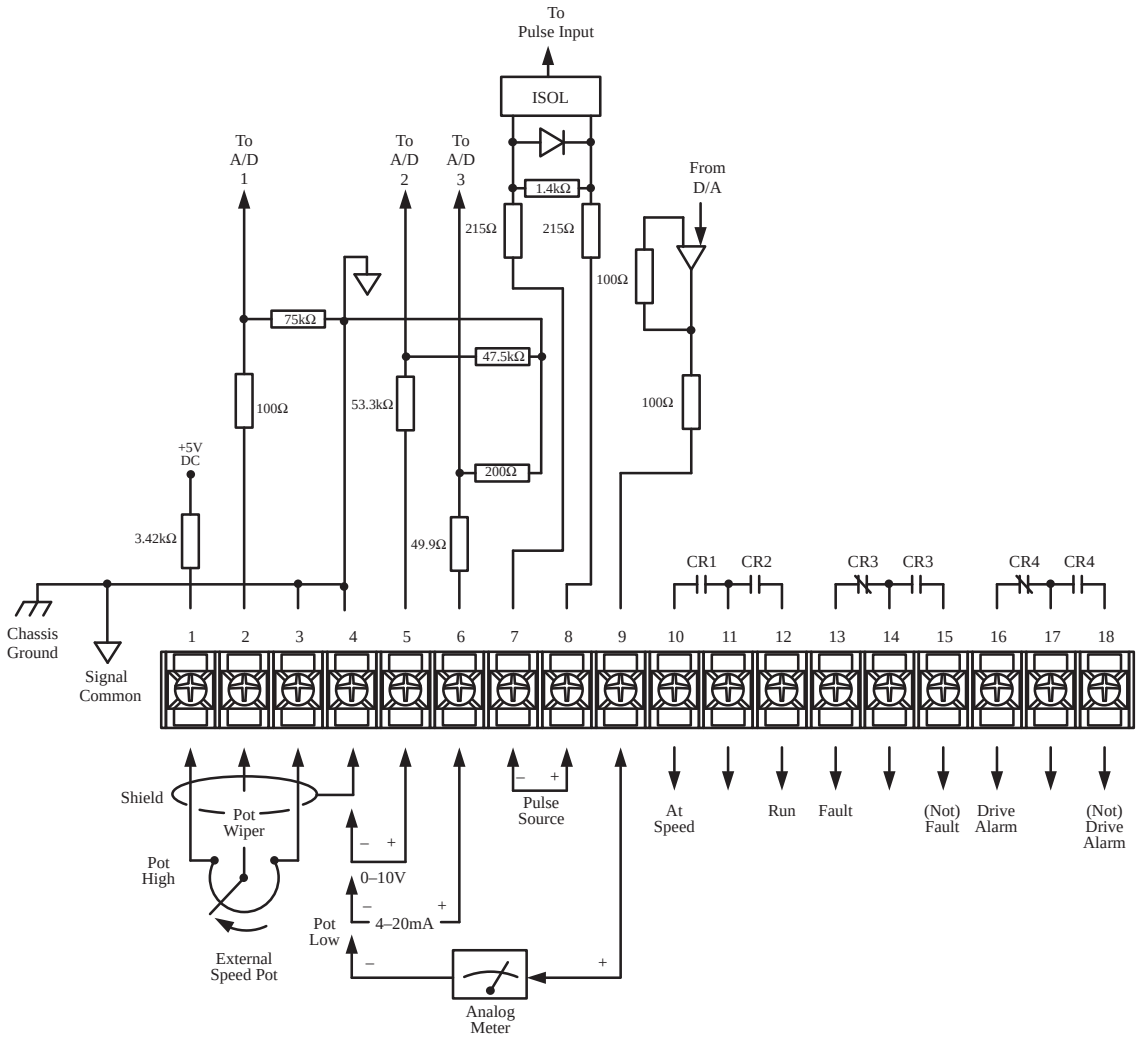


Table 36 - 1336 CLASSIC Drive Terminal Block TB2 Control and Signal Wiring

Terminals	Signal	Max Wire Size, mm^2 (AWG)	Recommended Torque, N•m (lb•in)
Terminals 1, 2, 3	External speed potentiometer	2.50 (14)	0.79 (7)
Terminals 3 and 4	Signal common		
Terminal 5, signal common	0...10V DC		
Terminal 6, signal common	4...20 mA		
Terminals 7 and 8	Pulse train		
Terminals 9, signal common	Meter output		
Terminals 10 and 11	At speed contact		
Terminals 11 and 12	Run contact		
Terminals 13, 14, 15	Fault contacts		
Terminals 16, 17, 18	Drive alarm contacts		

Figure 40 - 1336-MOD-L3 115V AC Logic Interface Board (TB3)

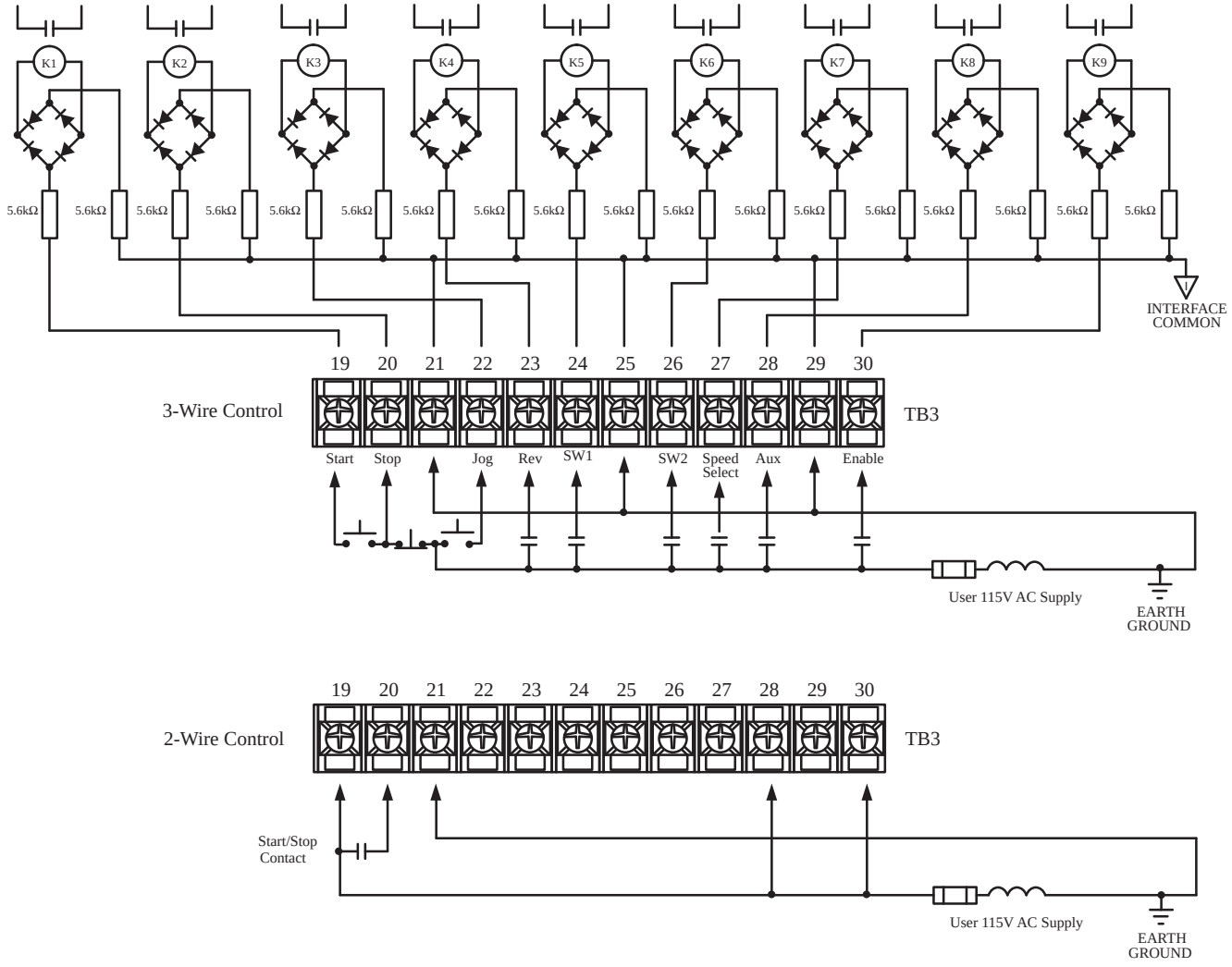


Table 37 - 1336 CLASSIC Drive Terminal Block TB3 Control and Signal Wiring

Terminals	Signal	Maximum Wire Size, mm^2 (AWG)	Recommended Torque, N•m (lb•in)
Terminal 19, interface common	Start	2.50 (14)	0.79 (7)
Terminal 20, interface common	Stop(1)		
Terminals 21, 25, 29	Interface common		
Terminal 22, interface common	Jog		
Terminal 23, interface common	Reverse		
Terminal 24, interface common	SW1		
Terminal 26, interface common	SW2		
Terminal 27, interface common	Speed select		
Terminal 28, interface common	Auxiliary(1)		
Terminal 30, interface common	Enable(1)		

(1) This signal must be present to permit the drive to operate from any control source.

1336 PLUS Drives Main Control Board I/O

TB2 is located at the bottom of the main control board. Frame A drives between 0.37...7.5 kW (0.5...10 Hp) have 18 positions. Remaining frame sizes from 5.5 kW (7.5 Hp) and up have 22 positions.

Figure 41 - 1336 PLUS Drive Terminal Block TB2 Control and Signal Wiring

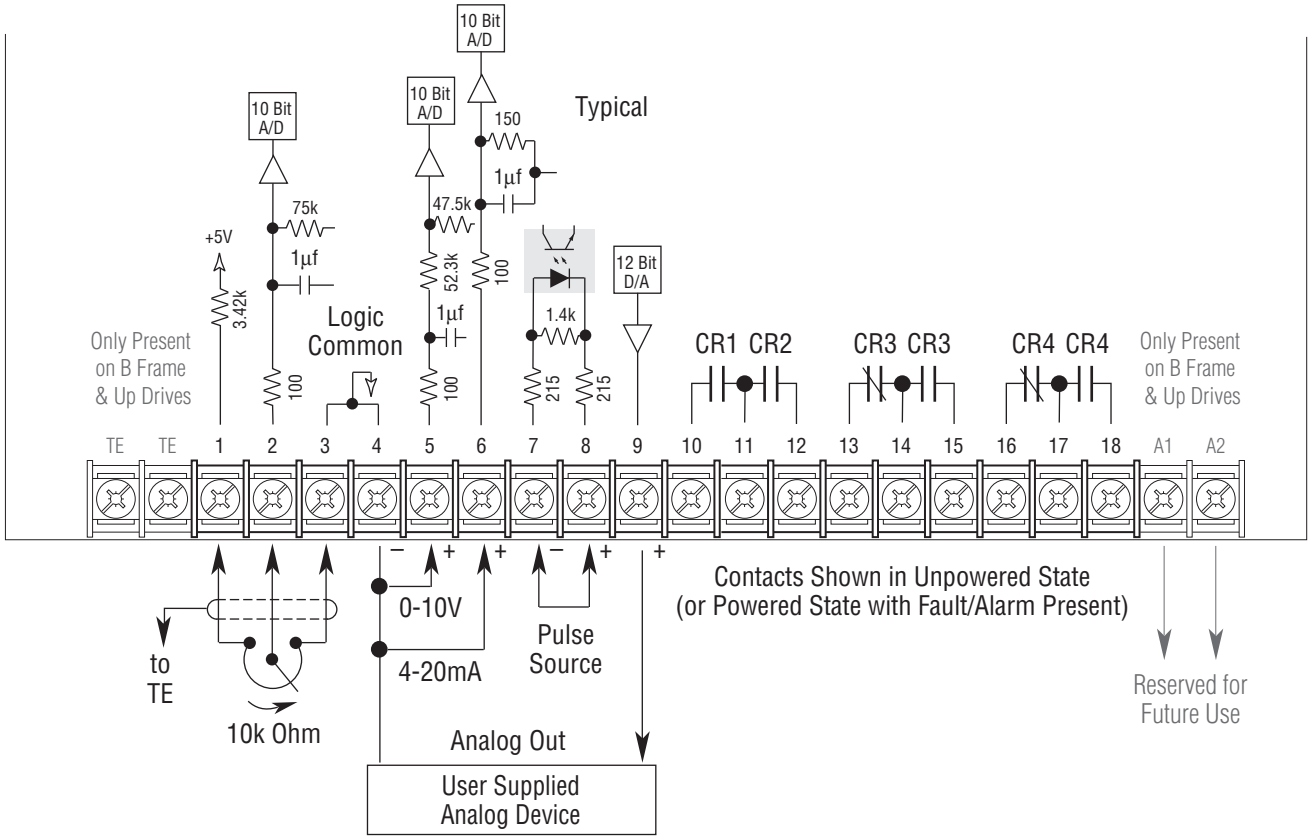


Table 38 - 1336 PLUS Drive Terminal Block TB2 Control and Signal Wiring

Terminal	Signal	
TE	True earth – shield termination	
1, 2, 3	External speed pot. or analog trim pot. (10 kΩ pot. required)	
4	Signal common	
5	0...10V DC input	Input impedance = 100 kΩ
6	4...20 mA input	Input impedance = 250 Ω
7, 8	Pulse input for frequency ref.(1)	Pulse inputs (TB2…7, 8) cannot be used if encoder inputs (TB3, terminals 31-36) are being used.
9	Analog output A Frame drives	Jumper JP1 to select 0…10V DC output(2) Jumper JP2 to select 0…20 mA output(3)
	Analog output B Frame drives and up	Jumper J5 selects output pins 1-2 = 0...20 mA(3) pins 3-4 = 0...10V DC 5(2)
10, 11	CR1 programmable contact	Resistive rating = 115V AC/30V DC, 5.0 A Inductive rating = 115V AC/30V DC 2.0 A
11, 12	CR2 programmable contact Firmware revisions 4.01 and later	
	CR2 run contact Firmware revisions below 4.01	
13, 14 14, 15	CR3 programmable contact Firmware revisions 4.01 and later	
	CR3 fault and fault NOT contact 3 Firmware revisions below 4.01	
16, 17 17, 18	CR4 programmable contact Firmware revisions 4.01 and later	
	CR4 alarm and alarm NOT contact Firmware revisions below 4.01	
A1, A2	Reserved for future use	

(1) Not available if encoder feedback option is used.
(2) Minimum load impedance:
A Frame drives = 3.5 kΩ
B Frame drives and up = 1.5 kΩ.
Recommended load for all frames = 10 kΩ.
(3) Maximum load impedance:
A Frame drives = 260 Ω
B Frame drives and up = 315 Ω

The control interface option (TB3) provides a means of interfacing various signals and commands to the 1336 PLUS drives by using contact closures. Six different versions of the option are available.

Figure 42 - 1336 PLUS Drive TB3 Terminal Designations

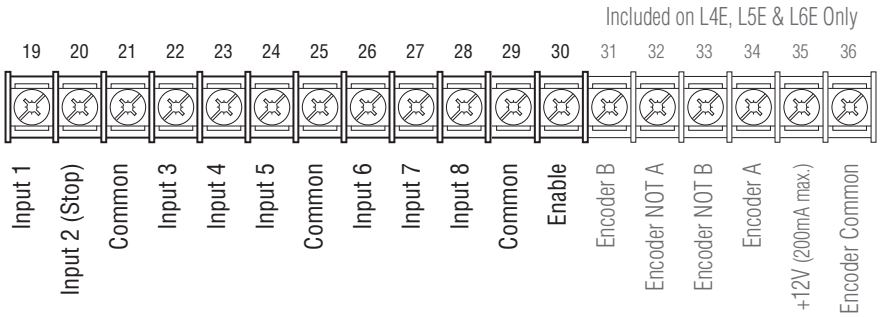
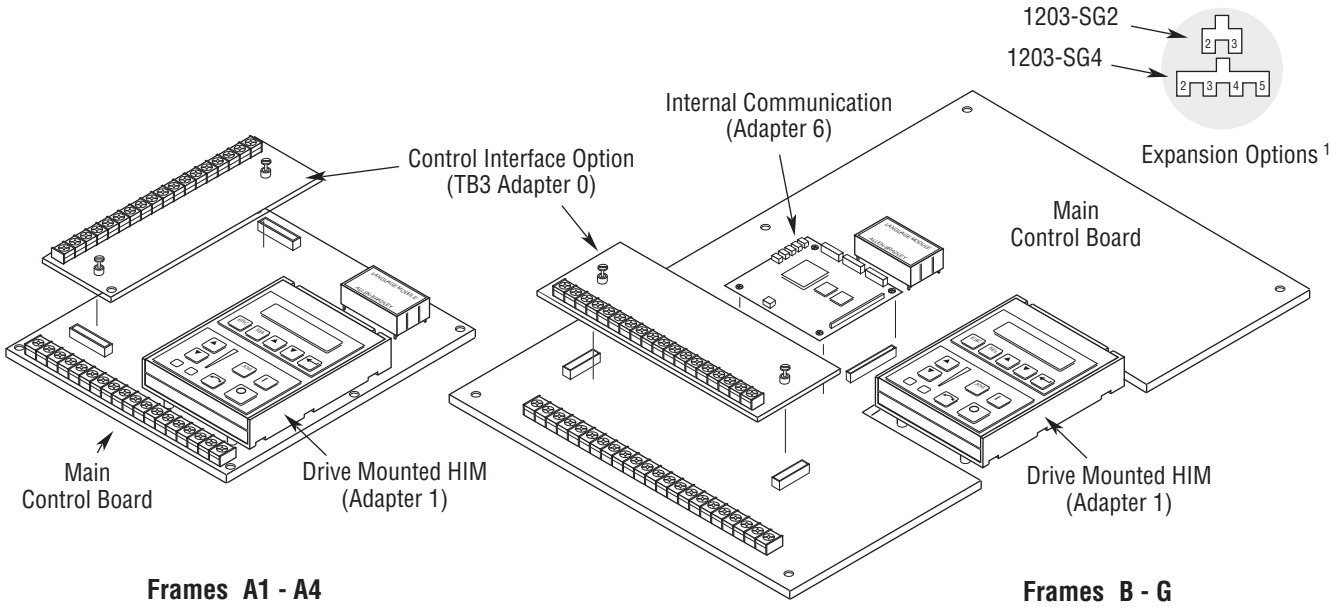


Table 39 - 1336 PLUS Drive Control Interface Option (TB3)

Control Interface Options (TB3)	Description
L4	Contact closure interface(1)
L4E	Contact closure interface(1) with encoder feedback inputs
L5	+24V AC/DC interface
L5E	+24V AC/DC interface with encoder feedback inputs
L6	115V AC interface
L6E	115V AC interface with encoder feedback inputs

(1) Uses internal +5V DC supply.

Figure 43 - 1336 PLUS Drive Adapter Definitions and TB3 Locations



1 Communications Port for remote HIM/communication options (Adapter 2) or Expansion Options (Adapters 2, 3, 4, 5) is located on the bottom of the enclosure (bottom of Main Control Board Mounting Plate for frames F-G).

1336 PLUS II Drives Main Control Board I/O

TB2 is located at the bottom of the main control board. Frame A drives have 18 positions. Remaining frame sizes have 22 positions.

IMPORTANT Any relay programmed as fault or alarm will energize (pick up) when power is applied to the drive, and de-energize (drop out) when a fault or alarm exists. Relays selected for other functions will energize only when that condition exists, and will de-energize when the condition is removed.

Figure 44 - 1336 PLUS II Drive TB2 Control and Signal Wiring (Digital Outputs)

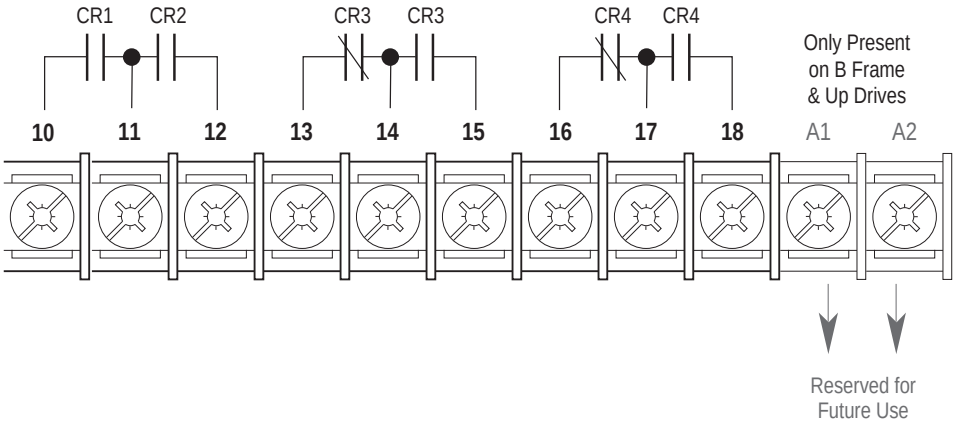


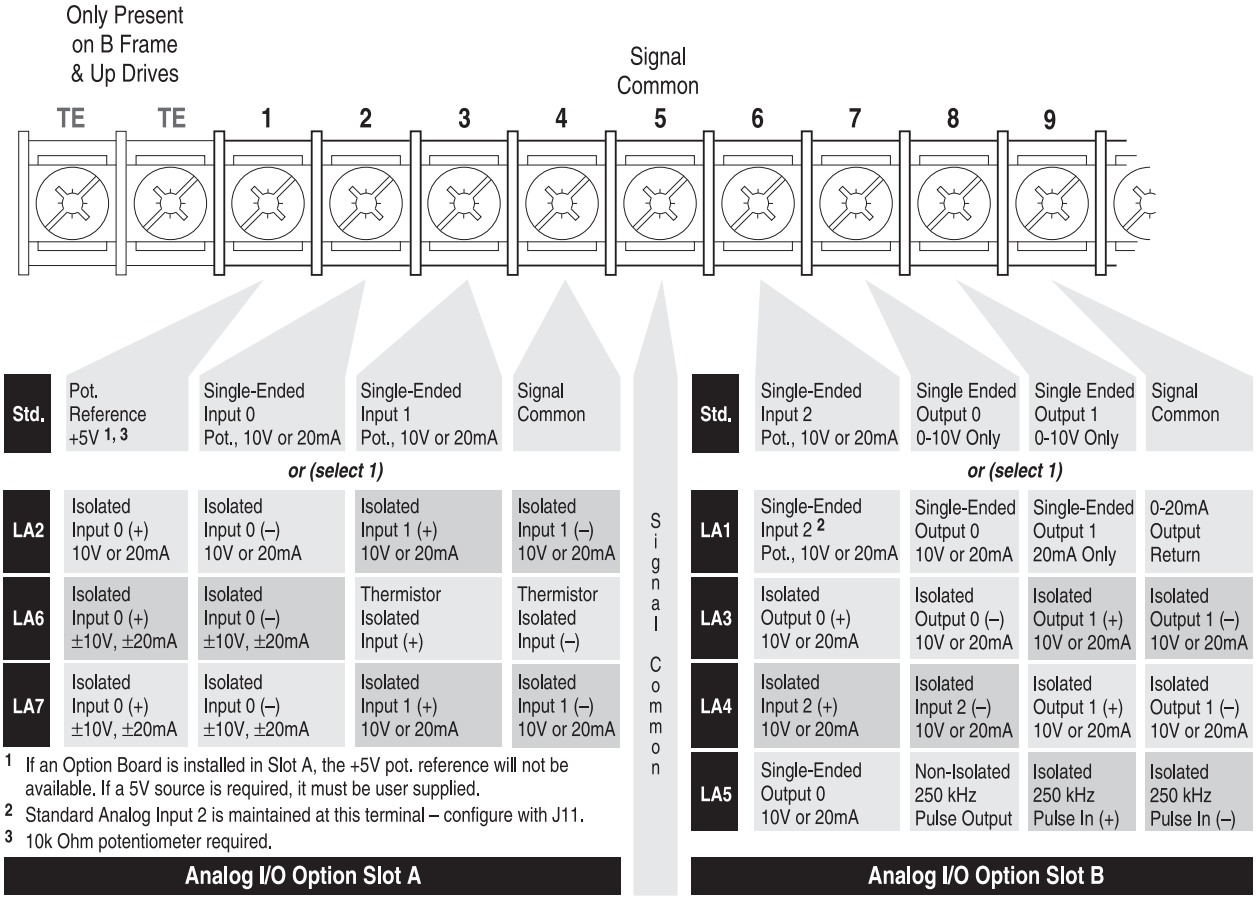
Table 40 - 1336 PLUS II Drive TB2 Control and Signal Wiring (Digital Outputs)

Terminal	Signal	
TE	True earth - shield termination	
10, 11	CR1 programmable contact	Resistive rating = 115V AC/30V DC, 5.0 A Inductive rating = 115V AC/30V DC, 2.0 A
11, 12	CR2 programmable contact	
13, 14 14, 15	CR3 programmable contact	
16, 17 17, 18	CR4 programmable contact	
A1, A2	Reserved for future use	

IMPORTANT On A Frame drives, the power supply used for relay contact outputs requires a field installation at the supply source of transient voltage surge suppression with maximum clamping voltage of 2.5 kV.

The 1336 PLUS II analog I/O configuration provides a standard set of inputs and outputs with the capability to install up to two option boards, thus replacing the standard I/O with a variety of options. All connections are performed at TB2. Installing an option board in the slot A or B location changes the function of those terminals on TB2 from standard. Only one option board can be installed in each slot.

Figure 45 - 1336 PLUS II Drive TB2 Control and Signal Wiring (Analog I/O)



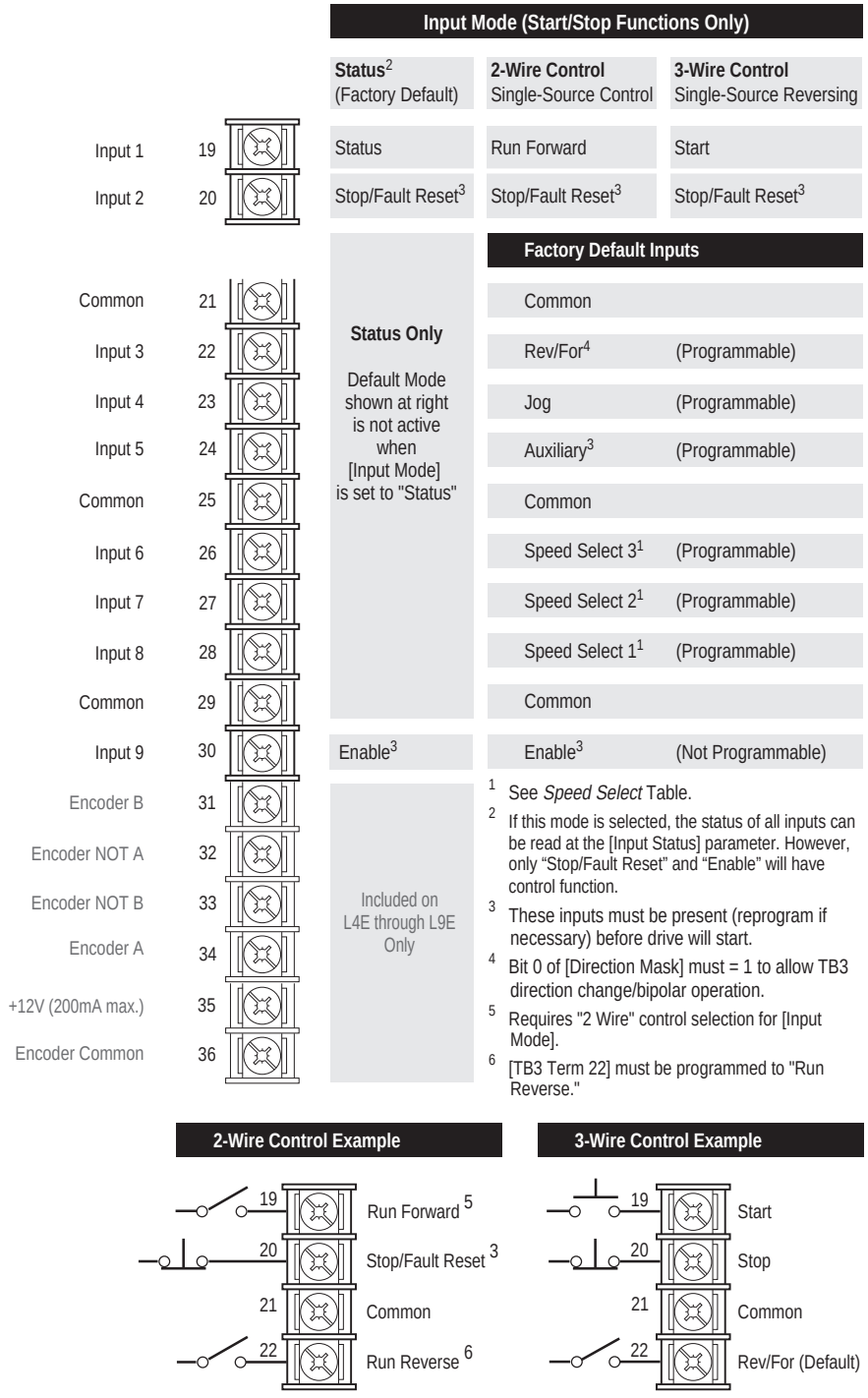
The control interface option (TB3) provides a means of interfacing various signals and commands to the 1336 PLUS II by using contact closures. Several different versions of the control interface option are available.

Table 41 - 1336 PLUS II Drive TB3 Control Interface Option Wiring

Control Interface Options (TB3)	Description
L4	Contact closure interface.(1)
L4E	Contact closure interface(1) with encoder feedback inputs.
L7E	Contact closure interface(1) with encoder feedback inputs (for use with encoder loss detection).
L5	+24V AC/DC interface.
L5E	+24V AC/DC interface with encoder feedback inputs.
L8E	+24V AC/DC interface with encoder feedback inputs (for use with encoder loss detection).
L6	115V AC interface.
L6E	115V AC interface with encoder feedback inputs.
L9E	115V AC interface with encoder feedback inputs (for use with encoder loss detection).

(1) Uses internal +5V DC supply.

Figure 46 - 1336 PLUS II Drive TB3 Digital I/O Default Settings



WARNING: A hazard of personal injury from automatic restart exists with 2-wire control. 2-wire control uses maintained run contacts that act as both run (closed) and stop (open) devices. Opening the stop contact (terminal 20) will stop the drive. If this contact is then closed, any fault will be reset. If a valid start command is still present, the drive will restart. Only use 2-wire control for applications outlined in NFPA79, 'Under Voltage Protection.'

WARNING: If a 3-wire device (for example, HIM) is also used, pressing the HIM stop key will stop the drive. Releasing the stop key clears any faults that are present, but the drive will not restart without cycling the start contact.

1336 FORCE Drives Main Control Board I/O

Encoder, brake, and drive-to-drive interface connections are performed on the main control board.

Figure 47 - 1336 FORCE Drive Main Control Board Terminal Block Locations

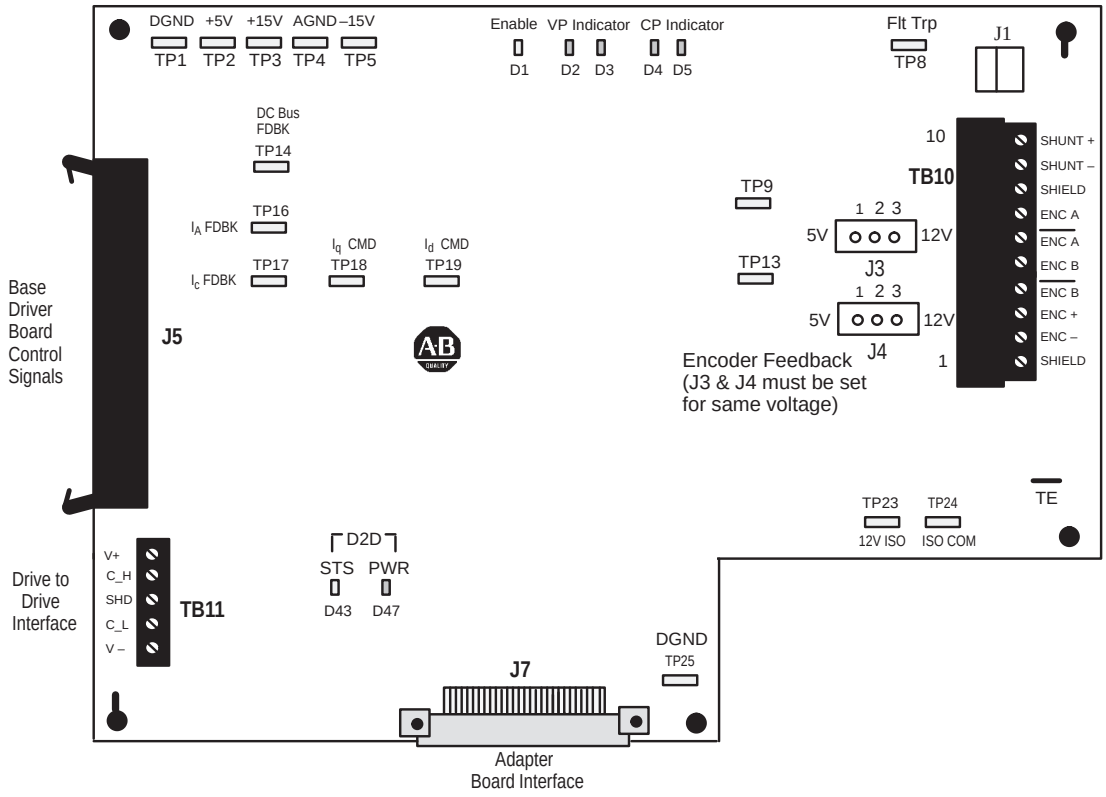


Table 42 - 1336 FORCE Drives Main Control Board Voltage Selection Jumpers

Jumper	+5V DC	+12V DC	Purpose
J3	1-2	2-3	Encoder voltage selection
J4	1-2	2-3	Encoder voltage selection

Table 43 - 1336 FORCE Drives Main Control Board Fault Indicators

LED	Color	Component	State/Status
D1	Green	Drive enable	ON – drive running; OFF – drive not running
D2	Green	VP indicator	ON – no faults; OFF – see D3
D3	Red		Refer to fault codes
D4	Green	CP indicator	ON – no faults; OFF – see D5
D5	Red		Refer to fault codes
D43	Amber	Drive to drive status	Solid – OK; blinking – fault
D47	Green	Drive to drive power	ON – power; OFF – no power

If your 1336 FORCE drive is equipped with a standard adapter board, terminal blocks TB5, TB6, and TB7, located at the bottom center of the board, are used for control and signal wiring (drive permissives). The standard adapter board is connected to the main control board through J1 on the main control interface.

Figure 48 - 1336 FORCE Drive Standard Adapter Board Terminal Block Locations

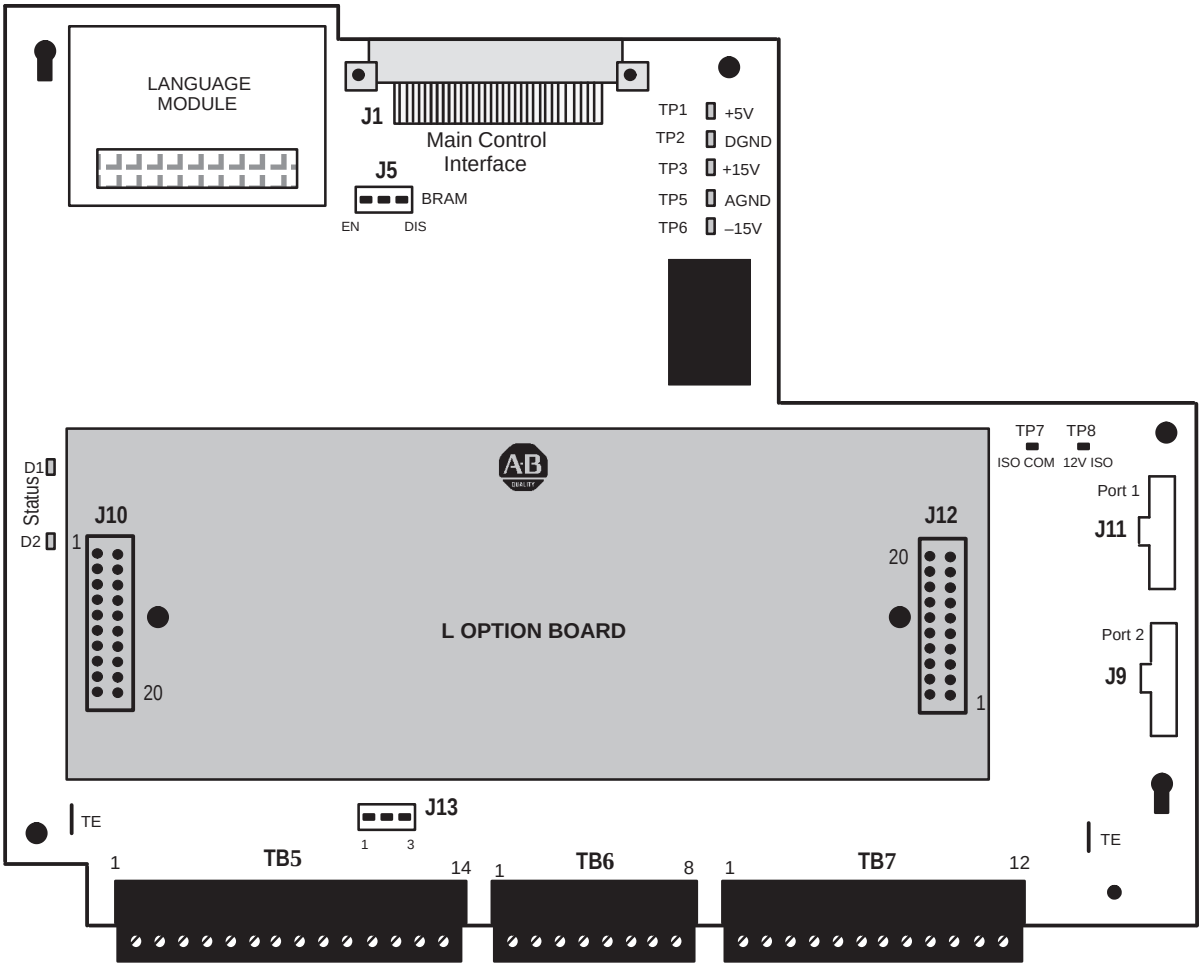


Table 44 - 1336 FORCE Drive Standard Adapter Board Fault Indicators

LED	State	Description
D1 (green)	Off Flashing Solid on	D2 on or no power Adapter warning fault Adapter OK
D2 (red)	Off Flashing Solid on	D1 on or no power Adapter soft fault Adapter hard fault

Table 45 - 1336 FORCE Drive Standard Adapter Board Voltage Selection Jumpers

Jumper	Position	Voltage	Purpose
J13	1 to 2 2 to 3	+5 V DC +12V DC	Pulse input voltage selection
J5	1 to 2 2 to 3		Block random access memory (BRAM) writer enabled BRAM writer disabled

Interface Board Installation and Removal

IMPORTANT If the **L** option board is being installed, standard adapter board jumpers at pins 3 and 4, and 17 and 18, of J10, must be removed and the proper Input Mode selected. If the **L** option board is removed, these jumpers must be reinstalled and the Input mode parameter must be programmed to **1**.

Figure 49 - 1336 FORCE Drive Interface Board Jumper Locations

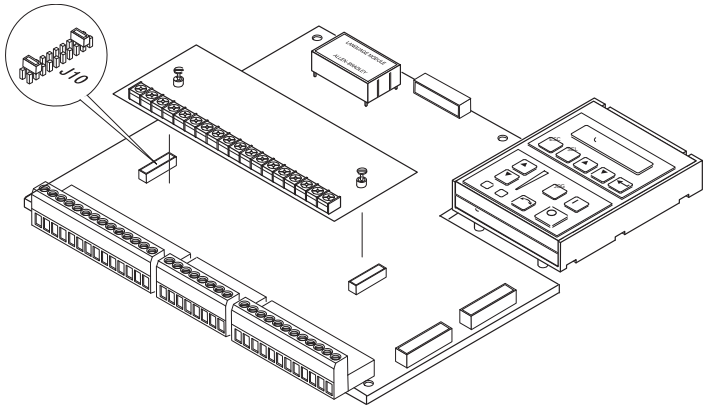
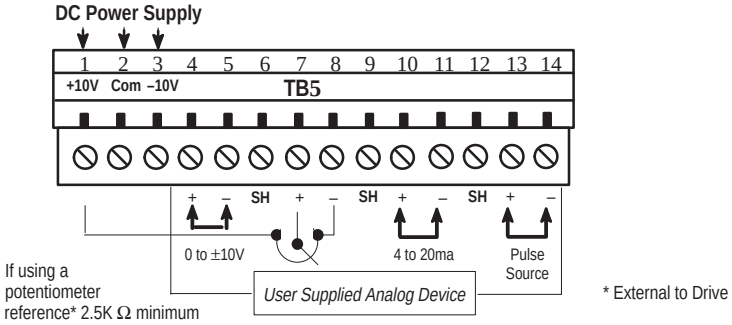
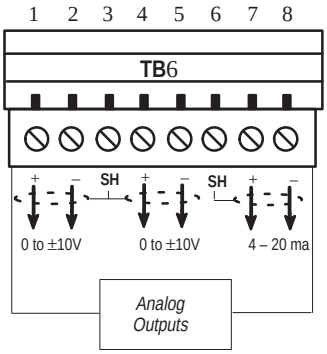
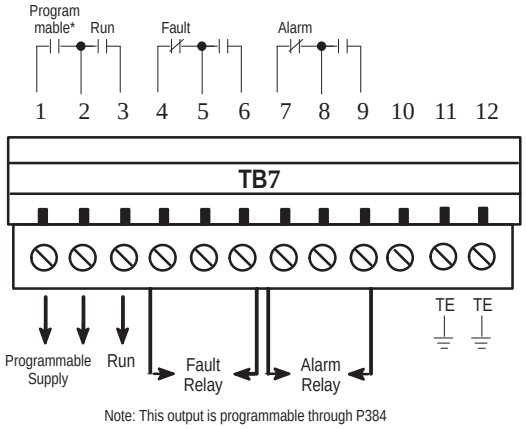
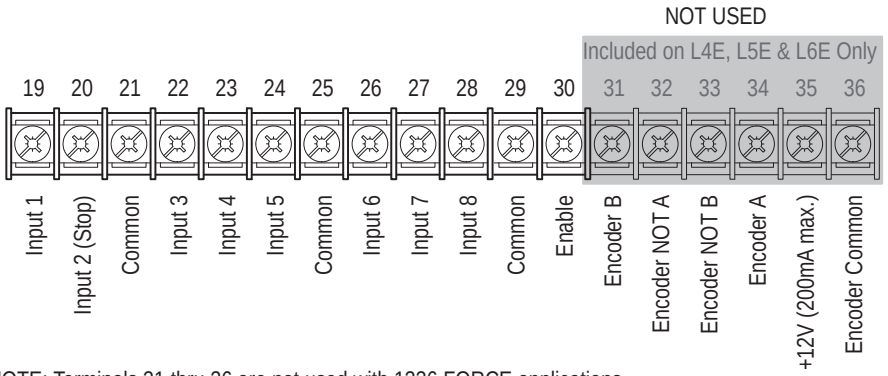


Table 46 - 1336 FORCE Drive Reference Signal Connections (Standard Adapter Board)

Terminal Block	Terminal Number	Signal	Terminal Details
TB5	SH	Shield ground	
	1, 2, 3	DC power supply: ±10V DC, 50 mA per voltage	
	4, 5, 6, 7	0…±10V DC input: Input Impedance = 20 kΩs	
	10, 11	4...20 mA input: input impedance = 130 Ω	
	13, 14	Pulse input for frequency ref.: +5V DC – jumper xx set to xx +12V DC – jumper xx set to xx Scale factor (pulse PPR) must be set	
TB6	SH	Shield ground	
	1, 2, 4, 5	0…±10V DC output: Output impedance = 100 Ω	
	7, 8	4...20 mA DC output: Output impedance = 20 Ω	
TB7	TE	Logic earth ground / shield ground	
	4,5,6	Fault contact: Resistive rating = 115V AC/30V DC, 5.0 A Inductive rating = 115V AC/30V DC, 2.0 A	
	7,8,9	Alarm contact: Resistive rating = 115V AC/30V DC, 5.0 A Inductive rating = 115V AC/30V DC, 2.0 A	

The control interface option provides a means of interfacing various signals and commands to the 1336 FORCE by using contact closures. Six different versions of the control interface option are available (see Table 47).

Figure 50 - 1336 FORCE Drive TB3 Terminal Designations



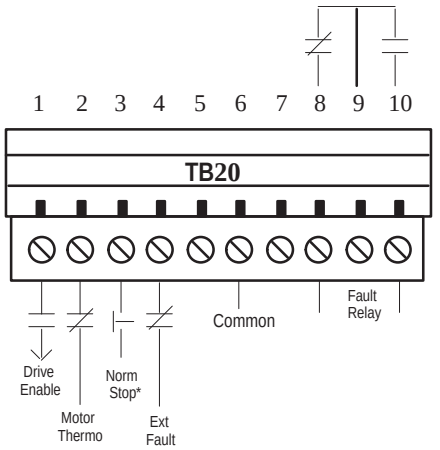
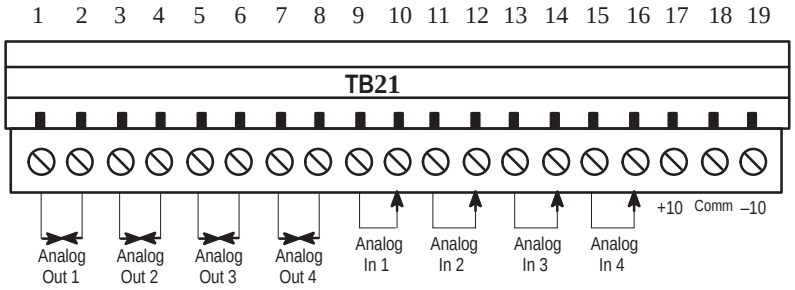
NOTE: Terminals 31 thru 36 are not used with 1336 FORCE applications

Table 47 - 1336 FORCE Drive TB3 Control Interface Options

Control Interface Option	Description
L4	Contact closure interface
L4E	Contact closure interface with encoder feedback inputs(1)
L5	+24V AC/DC interface
L5E	+24V AC/DC interface with encoder feedback inputs(1)
L6	115V AC interface
L6E	115V AC interface with encoder feedback inputs(1)

(1) Encoder feedback inputs are connected to TB10 on the FORCE drive. **Do Not** connect encoder feedback inputs to the control interface option card.

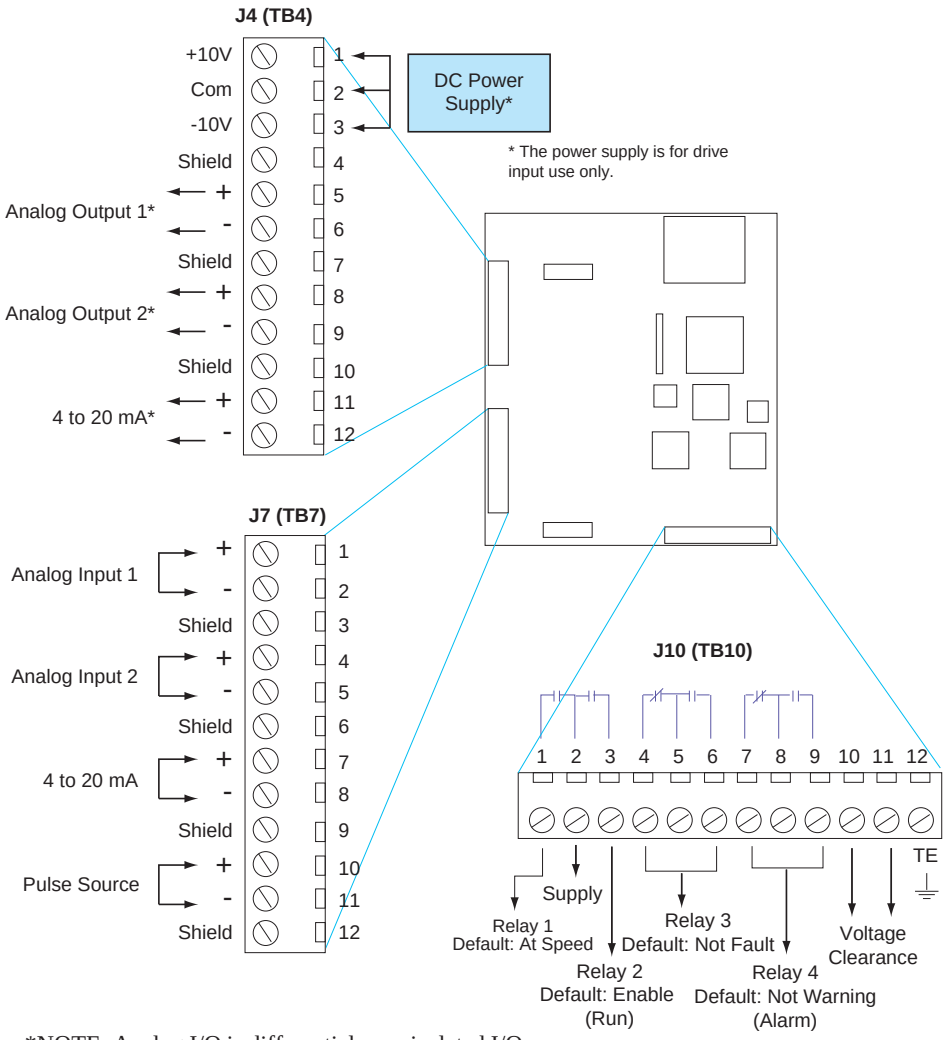
Table 48 - 1336 FORCE Drive Reference Signal Connections (PLC Comm Adapter)

Terminal Block	Terminal Number(s)	Signal	Terminal Details
TB20	1	Drive enable (NO)	
	2	Motor thermoguard (NC)	
	3	Normal stop (NC)	
	4	External fault (NC)	
	5		
	6	Input common	
	7		
	8	Fault output (NC)	
	9	Fault output (COM)	
	10	Fault output (NO)	
TB21	1	OUT1	
	2	COM1	
	3	OUT2	
	4	COM2	
	5	OUT3	
	6	COM3	
	7	OUT4	
	8	COM4	
	9	IN 1+	
	10	IN 1–	
	11	IN 2+	
	12	IN 2–	
	13	IN 3+	
	14	IN 3–	
	15	IN 4+	
	16	IN 4–	
	17	+10V	
	18	COM	
	19	–10V	

1336 IMPACT Drives Main Control Board I/O

You can use terminal blocks TB4, TB7, and TB10 for hard wiring your I/O for Frames A1, A2, A3, and A4.

Figure 51 - 1336 IMPACT Drive Reference Signal Connections (Frames A1...A4)



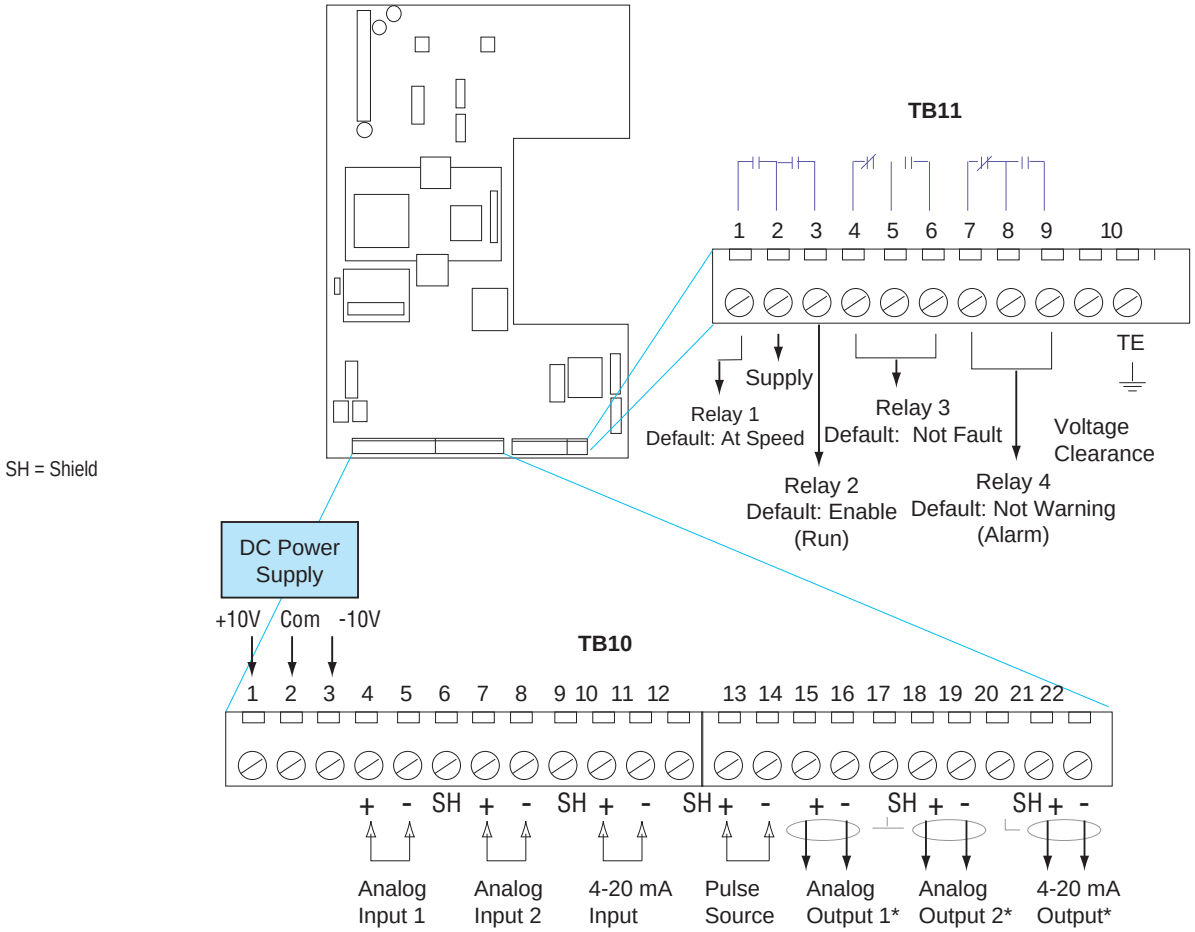
*NOTE: Analog I/O is differential, non-isolated I/O.
A (-) negative does not indicate common.

Table 49 - 1336 IMPACT Drive Terminal Block Descriptions (Frames A1...A4)

Terminal Block	Terminal Numbers	Description
TB4	4, 7, 10	Shield ground
	1, 2, 3	DC power supply: ±10V DC 50 mA per voltage
	5, 6, 8, 9	0…±10V DC output: Output impedance = 100 Ω; 10 mA max
	11, 12	4...20 mA DC output: Output impedance = 20 Ω
TB7	3, 6, 9, 12	Shield ground
	1, 2, 4, 5	0…±10V DC input: Input impedance = 20 kΩ
	7, 8	4...20 mA input: Input impedance = 130 Ω
	10, 11	Pulse input for frequency reference: +5V DC — jumper J8 set to 1 – 2 +12V DC — jumper J8 Set to 2 – 3s Scale factor (pulse PPR) must be set 10 mA min
TB10	12	Logic earth ground, shield
	1, 2, 3 4, 5, 6 7, 8, 9	Programmable contacts: Resistive rating = 115V AC/30V DC, 5.0 A Inductive rating = 115V AC/30V DC, 2.0 A
	10, 11	Voltage clearance. Provides physical space between the logic earth ground and other signals on the terminal block.

You can use terminal blocks TB10 and TB11 for hard wiring your I/O for Frames B, C, D, E, F, G, and H.

Figure 52 - 1336 IMPACT Drive Reference Signal Connections (Frames B...H)



NOTE: Analog I/O is differential, non-isolated I/O. A negative (-) does not Indicate common.

Table 50 - 1336 IMPACT Drive Terminal Block Descriptions (Frames B...H)

Terminal Block	Terminal Numbers	Description
TB10	6, 9,1 2, 17, 20	Shield ground
	1, 2, 3	DC power supply: ± 10V DC 50 mA per voltage
	4, 5, 7, 8	0…±10V DC input: Input impedance = 20 kΩ
	10, 11	4...20 mA input: Input impedance = 130 Ω
	13, 14	Pulse input for frequency reference: +5V DC — jumper J4 set to 1 – 2 +12V DC — jumper J4 set to 2 – 3 Scale factor (pulse PPR) must be set 10 mA minimum
	15, 16, 18, 19	0…±10V DC output: Output impedance = 100 Ω, 10 mA maximum
	21, 22	4...20 mA DC output: Output impedance = 20 Ω
TB11	10	Logic earth ground, shield
	1, 2, 3 4, 5, 6 7, 8, 9	Programmable contacts: Resistive rating = 115V AC/30V DC, 5.0 A Inductive rating = 115V AC/30V DC, 2.0 A

The **L** option is a plug-in option card that provides control inputs to the drive. Their are six versions of the **L** option (see Table 51).

Figure 53 - 1336 IMPACT Drive "L" Option Terminals (TB3)

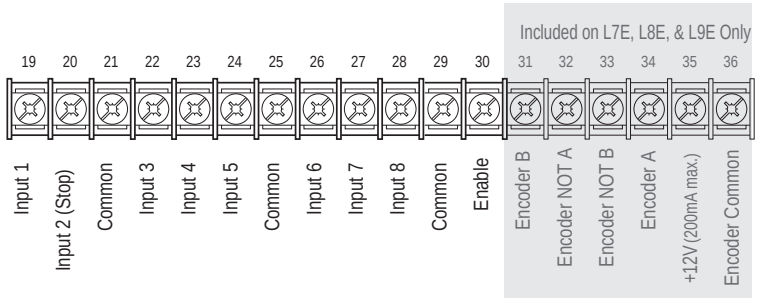


Table 51 - 1336 IMPACT Drive "L" Option Descriptions

IMPORTANT We do not recommend using an L4E, L5E, or L6E with the 1336 IMPACT drive.

"L" Option	Description	Can you attach an encoder?	Compatible Allen-Bradley PLC Modules
L4 (1)	Contact closure interface	No	1771-OYL, 1171-OZL
L7E (2)		Yes	
L5 (1)	+24V AC/DC interface	No	1771-OB, 1771-OB16, 1771-OBB, 1771-OBD, 1771-OBN, 1771-OQ, 1771-OQ16, 1771-OYL, 1171-OZL
L8E (2)		Yes	
L6 (1)	115V AC interface	No	1771-OA, 1771-OAD(3), 1771-OW, 1771-OWN
L9E (2)		Yes	

(1) The L4, L5, and L6 options each have nine control inputs. You can select the function of each input through an L Option mode, which is covered later in this chapter.
(2) The L7E, L8E, and L9E options are similar to the L4, L5, and L6 options with the addition of encoder feedback inputs.
(3) Contact the factory for the recommended series/revision level.

PowerFlex 753 Drives Main Control Board I/O

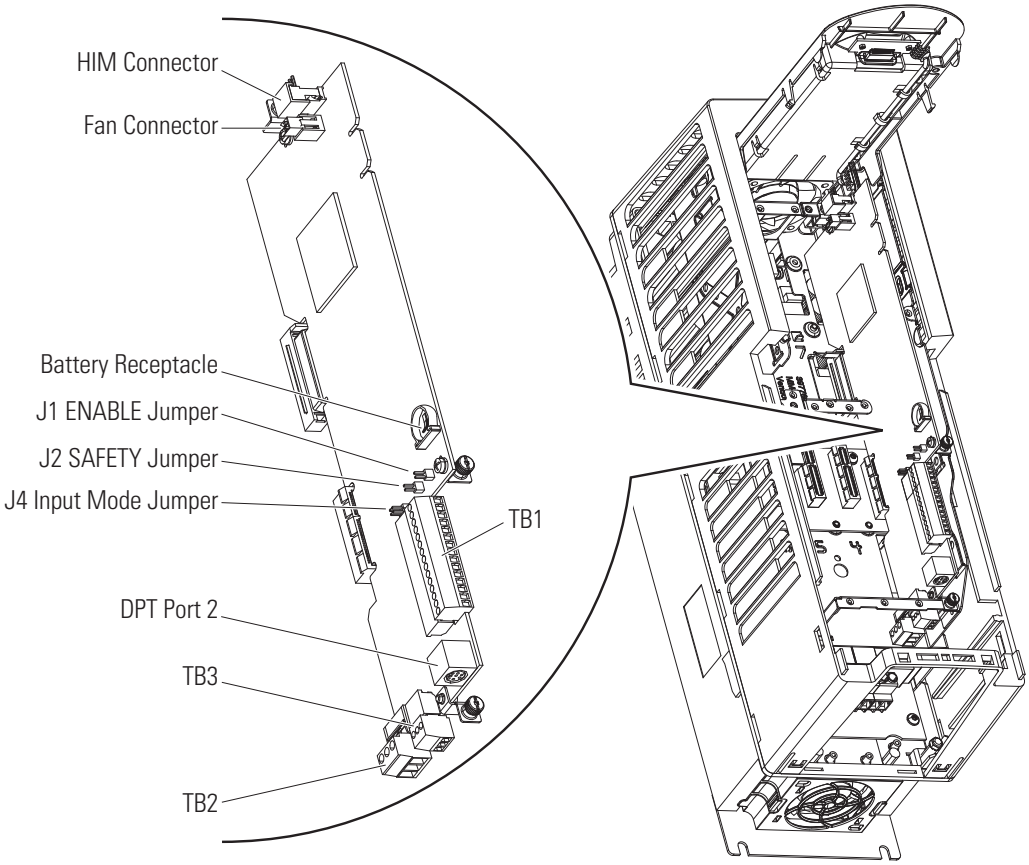
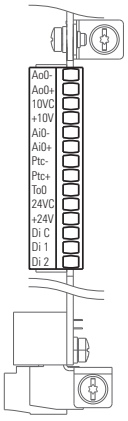


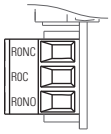
Table 52 - PowerFlex 753 Drive TB1 Terminal Designations



Terminal	Name	Description	Related Param
Ao0–	Analog out 0 (–)	Bipolar, ±10V, 11 bit & sign, 2 kΩ minimum load; 4...20 mA, 11 bit & sign, 400 Ω maximum load	270
Ao0+	Analog out 0 (+)		
10VC	10 volt common	For (+) 10 volt references; 2 kΩ minimum	
+10V	+10 volt reference		
Ai0–	Analog input 0 (–)	Isolated (1), bipolar, differential, ±10V, 11 bit & sign, 88 kΩ input impedance	255
Ai0+	Analog input 0 (+)		
Ptc–	Motor PTC (–)	Motor protection device (positive temperature coefficient)	250
Ptc+	Motor PTC (+)		
T0	Transistor output 0	Open drain output, 48V DC, 250 mA maximum load	
24VC	24 volt common	Drive supplied logic input power; 150 mA maximum	
+24V	+24 volt DC		
Di C	Digital input common	24V DC - Opto isolated Low state: less than 5V DC High state: greater than 20V DC	150
Di 1	Digital input 1		
Di 2	Digital input 2		

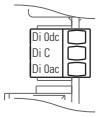
(1) Differential Isolation—external source must be maintained at less than 160V with respect to PE. Input provides high common mode immunity.

Table 53 - PowerFlex 753 Drive TB2 Terminal Designations



Terminal	Name	Description
R0NC	Relay 0 N.C.	Output relay 0 normally closed contact
R0C	Relay 0 common	Output relay 0 common
R0NO	Relay 0 N.O.	Output relay 0 normally open contact

Table 54 - PowerFlex 753 Drive TB3 Terminal Designations



Terminal	Name	Description
Di 0dc	Digital input 24V DC	Connections for DC power supply
Di C	Digital input common	Digital input common
Di 0ac	Digital input 120V AC	Connections for AC power supply

PowerFlex 755 Frame 8 and Frame 9 Main Control Board I/O

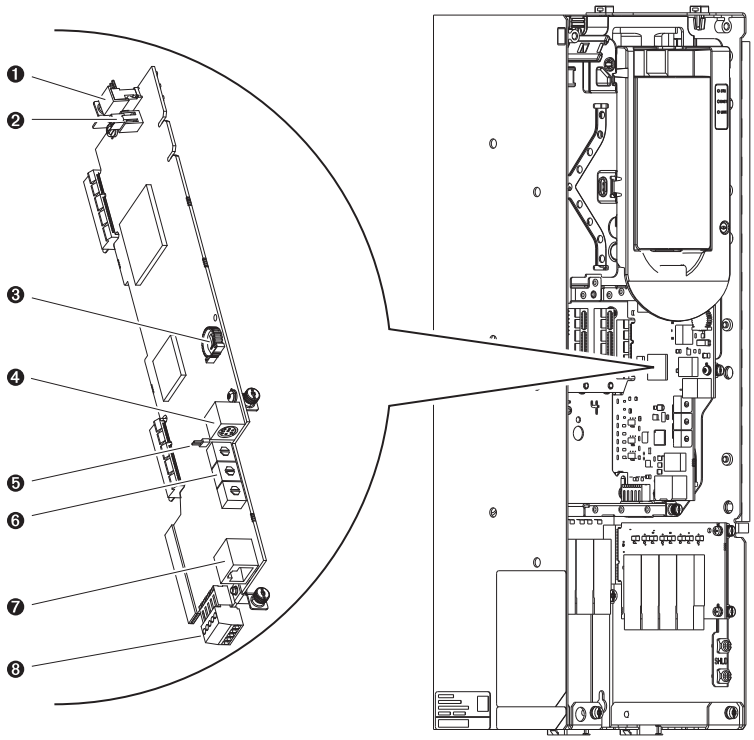
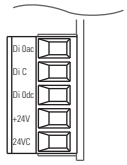


Table 55 - Control Board Details

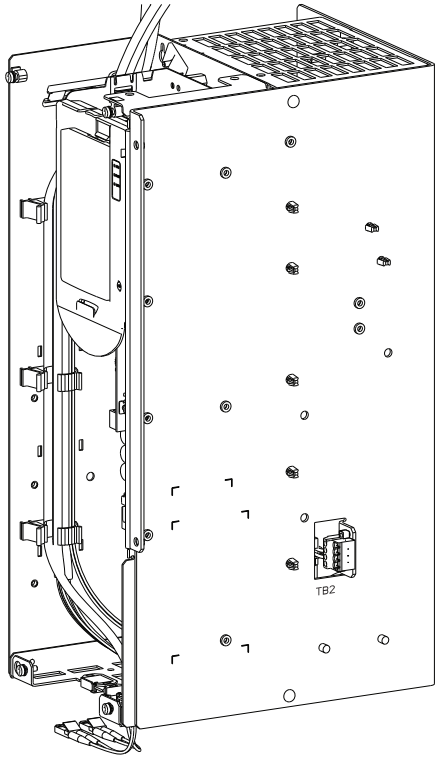
No.	Name	Description
❶	HIM connector	DPI Port 1 (HIM Cradle) connection.
❷	Fan connector	Power supply for internal cooling fan.
❸	Battery receptacle 	User installed CR1220 lithium coin cell battery provides power to the real time clock (optional, not supplied). Preserves the real time clock setting in the event power to the drive is lost or cycled.
❹	DPI port 2	Cable connection for handheld and remote HIM options.
❺	ENABLE jumper	Hardware enable jumper. Removed when a hardware enable configuration is utilized.
❻	Embedded EtherNet/IP(1) address selectors	Rotary switches for setting lowest octet of EtherNet address (forces address to 192.168.1.xxx). Refer to the Programming Manual, publication 750-PM001 for instructions on setting the IP address.
❼	Embedded EtherNet/IP(1) connector	Network cable connection.
❽	TB1	I/O terminal block.

(1) Refer to the PowerFlex 755 Drive Embedded EtherNet/IP Adapter User Manual, publication 750COM-UM001.

Table 56 - TB1 I/O Terminal Designations

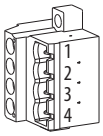
Fixed I/O	Terminal	Name	Description
	Di 0ac	Digital input 0 (120V AC)	Connections for AC power supply.
	Di C	Digital input common	Digital input common
	Di 0dc	Digital input 0 (24V DC)	Connections for DC power supply.
	+24V	+24 volt power	Connections for drive supplied 24V power. 150 mA maximum
	24VC	24 volt common	

PowerFlex 750-Series AC Input Drive Control and Power Terminal Block



AC Input Drive Control Panel

Table 57 - TB2 Terminal Designations

Fixed I/O	Terminal	Name	Description	Rating	Related Param
	1	Shunt trip common	Output relay common	125V AC, 10 A max., 1250 VA Resistive Only	16 on port 11
	2	Shunt trip no	Output relay normally open contact.		
	3	Fan 240V AC out neutral	Connections for cooling fans.	240V AC, 50/60 Hz, 1.4 A, 336 VA	
	4	Fan 240V AC out hot			

Shunt Trip Contact Operation

A ground fault occurs when the input ground current exceeds the threshold set in P16 [Gnd Cur Flt Lvl] on port 11 for five line cycles.

Option Modules/Interface Boards

1336-Series Control Interface Board Options

The control interface board options provide a means of interfacing various signals and commands to the 1336-Series drives.

Table 58 - 1336-Series Drives Control Interface Board Options

Option	Description	1336 CLASSIC	1336 PLUS	1336 PLUS II	1336 FORCE	1336 IMPACT
L1	+5V DC TTL logic contact closure interface	X				
L2	+24V DC logic interface	X				
L3	115V AC logic interface	X				
L4	Contact closure interface(1)		X	X	X	X
L4E	Contact closure interface with encoder feedback inputs(1)		X	X	X	
L7E	Contact closure interface with encoder feedback inputs for use with encoder loss detection(1)			X		X
L5	+24V AC/DC interface		X	X	X	X
L5E	+24V AC/DC interface with encoder feedback inputs		X	X	X	
L8E	+24V AC/DC interface with encoder feedback inputs for use with encoder loss detection			X		X
L6	115V AC interface		X	X	X	X
L6E	115V AC interface with encoder feedback inputs		X	X	X	
L9E	115V AC interface with encoder feedback inputs for use with encoder loss detection			X		X

(1) Uses internal +5V DC supply.

PowerFlex 750-Series Option Modules

See the Option Module Installation section of the PowerFlex 750-Series AC Drives Installation Instructions, publication 750-IN001, for more information about optional I/O modules.

Cat. Nos.
20-750-2262C-2R,
20-750-2262D-2R,
20-750-2263C-1R2T

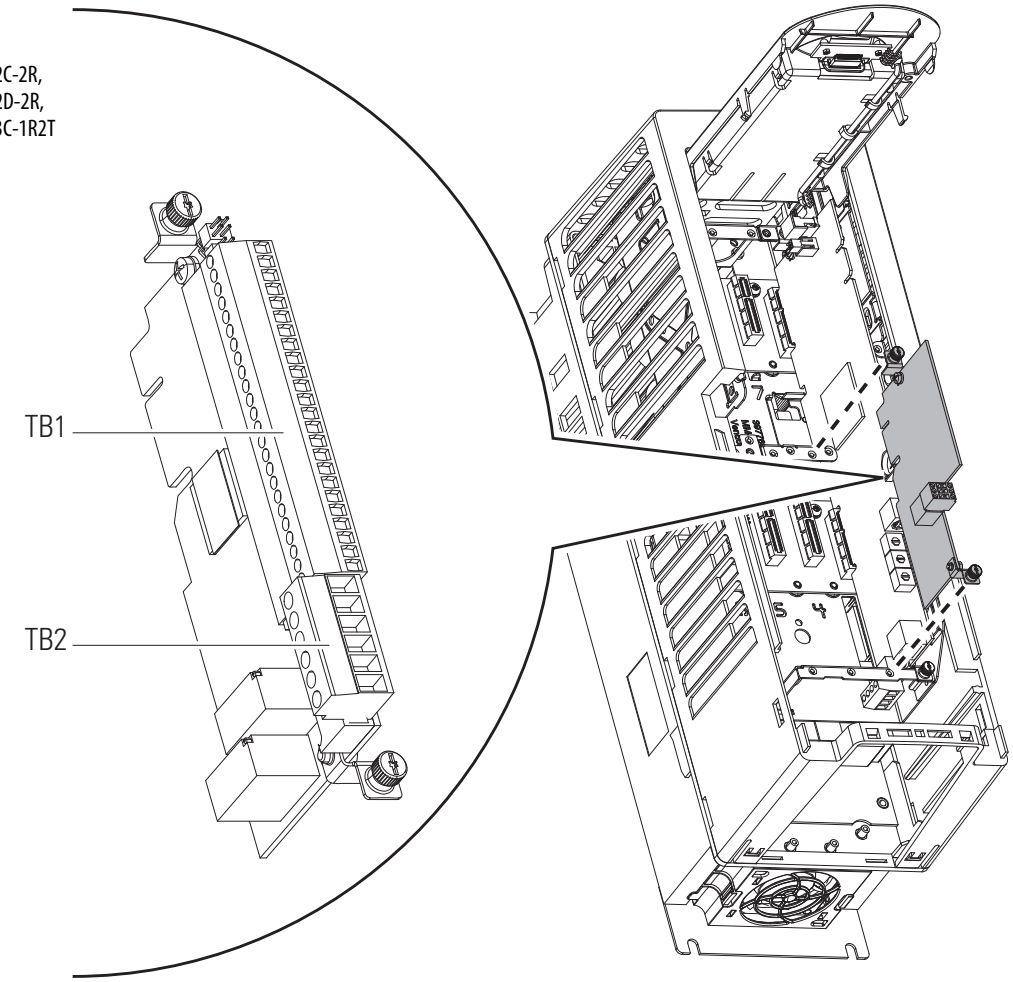
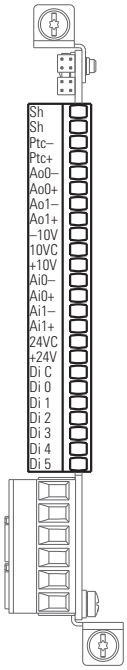


Table 59 - TB1 Control Terminal Designations

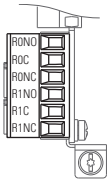


Terminal	Name	Description	Related Param.
Sh	Shield	Terminating point for wiring shields when an EMC plate or conduit box is not installed	
Sh			
Ptc–	Motor PTC (–)	Motor protection device (positive temperature coefficient)	40
Ptc+	Motor PTC (+)		
Ao0–	Analog out 0 (–)	Bipolar, ±10V, 11 bit & sign, 2 kΩ min load; 4...20 mA, 11 bit & sign, 400 Ω max load	75
Ao0+	Analog out 0 (+)		
Ao1–	Analog out 1 (–)		85
Ao1+	Analog out 1 (+)		
–10V	–10 volt reference	2 kΩ min	
10VC	10 volt common	For (–) and (+) 10 volt references	
+10V	+10 volt reference	2 kΩ min	
Ai0–	Analog input 0 (–)	Isolated [2], bipolar, differential, ±10V, 11 bit & sign, 88k Ω input impedance	50, 70
Ai0+	Analog input 0 (+)		
Ai1–	Analog input 1 (–)		60, 70
Ai1+	Analog input 1 (+)		
24VC	24 volt common	Drive supplied logic input power 200 mA max	
+24V	+24 volt DC		
Di C	Digital input common	Common for digital inputs 0…5	
Di 0	Digital input 0 [1]	**24V DC** - Opto isolated Low state: less than 5V DC High state: greater than 20V DC 11.2 mA DC **115V AC, 50/60 Hz** - Opto isolated Low state: less than 30V AC High state: greater than 100V AC	1
Di 1	Digital input 1 [1]		
Di 2	Digital input 2 [1]		
Di 3	Digital input 3 [1]		
Di 4	Digital input 4 [1]		
Di 5	Digital input 5 [1]		

(1) Digital Inputs are either 24 Volts DC (2262C) or 115 Volts AC (2262D) based on module catalog number. Be sure that applied voltage is correct for I/O module.

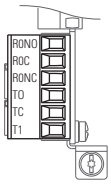
(2) Differential Isolation—external source must be maintained at less than 160V with respect to PE. Input provides high common mode immunity.

Table 60 - TB2 Terminal Designations (Cat. Nos. 20-750-2262*x*-2R) [1]



Terminal	Name	Description	Related Param.
R0NO	Relay 0 N.O.	Relay contact output Rating: 240V AC or 24V DC = 2 A max Inductive/Resistive	10
R0C	Relay 0 common		
R0NC	Relay 0 N.C.		
R1NO	Relay 1 N.O.		20
R1C	Relay 1 common		
R1NC	Relay 1 N.C.		

Table 61 - TB2 Terminal Designations (Cat. No. 20-750-2263C-1R2T) [1]



Terminal	Name	Description	Related Param.
R0NO	Relay 0 N.O.	Relay contact output Rating: 240V AC or 24V DC = 2 A max Inductive/Resistive	10
R0C	Relay 0 common		
R0NC	Relay 0 N.C.		
T0	Transistor output 0	Transistor output Rating: 24V DC = 1 A max Resistive	20
TC	Transistor output common		
T1	Transistor output 1		30

(1) -2R suffix signifies two relays and -1R2T signifies one relay and two transistor outputs.

PowerFlex 750-Series I/O Terminal Blocks

Table 62 - Main Control Board I/O Terminal Block Specifications

Name	Wire Size Range		Torque		Strip Length
	Max	Min	Max	Recommended	
753 control module TB1, TB2, and TB3	2.5 mm^2 (14 AWG)	0.3 mm^2 (28 AWG)	0.25 N•m (2.2 lb•in)	0.2 N•m (1.8 lb•in)	6 mm (0.24 in.)
755 control module TB1	2.5 mm^2 (14 AWG)	0.3 mm^2 (28 AWG)	0.25 N•m (2.2 lb•in)	0.2 N•m (1.8 lb•in)	6 mm (0.24 in.)

Table 63 - Option Module I/O Terminal Block Specifications

Name	Wire Size Range		Torque		Strip Length
	Max	Min	Max	Recommended	
I/O module TB1	2.5 mm^2 (14 AWG)	0.3 mm^2 (28 AWG)	0.25 N•m (2.2 lb•in)	0.2 N•m (1.8 lb•in)	6 mm (0.24 in.)
I/O module TB2	4.0 mm^2 (12 AWG)	0.25 mm^2 (24 AWG)	0.5 N•m (4.4 lb•in)	0.4 N•m 3.5 lb•in)	7 mm (0.28 in.)
Safe torque off (1)	0.8 mm^2 (18 AWG)	0.3 mm^2 (28 AWG)	N/A		10 mm (0.39 in.)
Single incremental encoder	0.8 mm^2 (18 AWG)	0.3 mm^2 (28 AWG)	N/A		10 mm (0.39 in.)
Safe speed monitor TB1 and TB2 (1)	2.5 mm^2 (14 AWG)	0.25 mm^2 (24 AWG)	0.25 N•m (2.2 lb•in)	0.2 N•m (1.8 lb•in)	6 mm (0.24 in.)
Dual incremental encoder	0.8 mm^2 (18 AWG)	0.3 mm^2 (28 AWG)	N/A		10 mm (0.39 in.)
755 universal feedback module	0.8 mm^2 (18 AWG)	0.3 mm^2 (28 AWG)	N/A		10 mm (0.39 in.)
Auxiliary power supply TB1	2.5 mm^2 (14 AWG)	0.3 mm^2 (28 AWG)	0.25 N•m (2.2 lb•in)	0.2 N•m (1.8 lb•in)	6 mm (0.24 in.)

(1) Shielded cable required.

Table 64 - Three-Phase Drive Assembly I/O Terminal Block and Connector Specifications

Name	Wire Size Range		Torque		Strip Length
	Max	Min	Max	Recommended	
Converter TB1 and TB2	4.0 mm^2 (12 AWG)	0.25 mm^2 (24 AWG)	0.5 N•m (4.4 lb•in)	0.4 N•m (3.5 lb•in)	7 mm (0.28 in.)
Fiber interface PCB connector P13	4.0 mm^2 (12 AWG)	0.25 mm^2 (24 AWG)	0.5 N•m (4.4 lb•in)	0.4 N•m (3.5 lb•in)	7 mm (0.28 in.)
Fiber interface PCB connector P14	2.5 mm^2 (14 AWG)	0.3 mm^2 (28 AWG)	0.25 N•m (2.2 lb•in)	0.2 N•m (1.8 lb•in)	6 mm (0.24 in.)

Encoder Descriptions

1336-Series Drives

Encoder Inputs

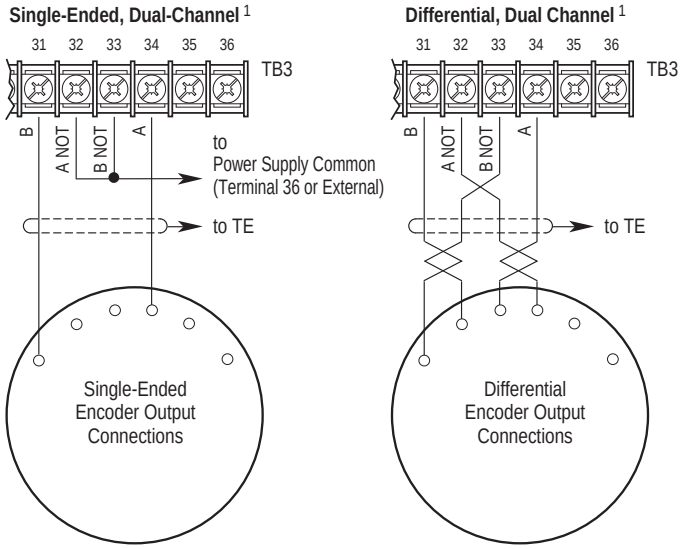
- Encoders must be line driver-type, quadrature (dual-channel) or pulse (single-channel), 5V DC or 8...15V DC output, single-ended or differential, and capable of supplying a minimum of 10mA per channel.
- Maximum input frequency is 250 kHz.
- Encoder inputs are available at TB3.
- The interface board is jumper-selectable to accept a 5V TTL or 12V DC square-wave with a minimum high-state voltage of 3.0V DC (TTL) or 7.0V DC (12-volt encoder).
- Maximum high-state voltage is 18.5V DC (do not exceed voltage; the board could be damaged).
- Maximum low-state voltage is 0.4V DC.

IMPORTANT Correct direction of motor rotation as determined during start-up may require that the A or B channel wiring be reversed.

Encoder and Communications Cabling

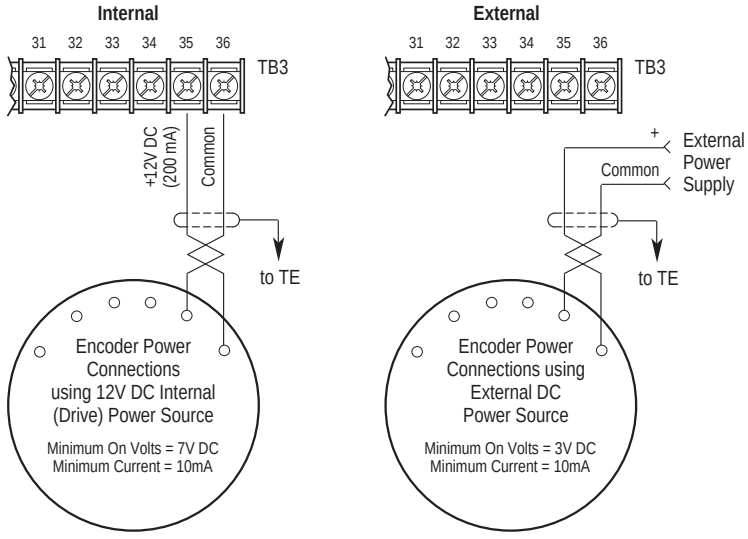
If encoder connections or communications cables are used, the wiring must be separated from power cabling. Separate the wiring/cabling by using carefully routed, shielded cable (ground cable shield at the drive end only), or a separate steel conduit (grounded at both ends).

Figure 54 - Encoder Signal Wiring



1 For Single-Channel applications, eliminate the B and B (NOT) connections. Some encoders may label the "A" connection as "Signal." Single-channel provides speed indication Only, Not direction.

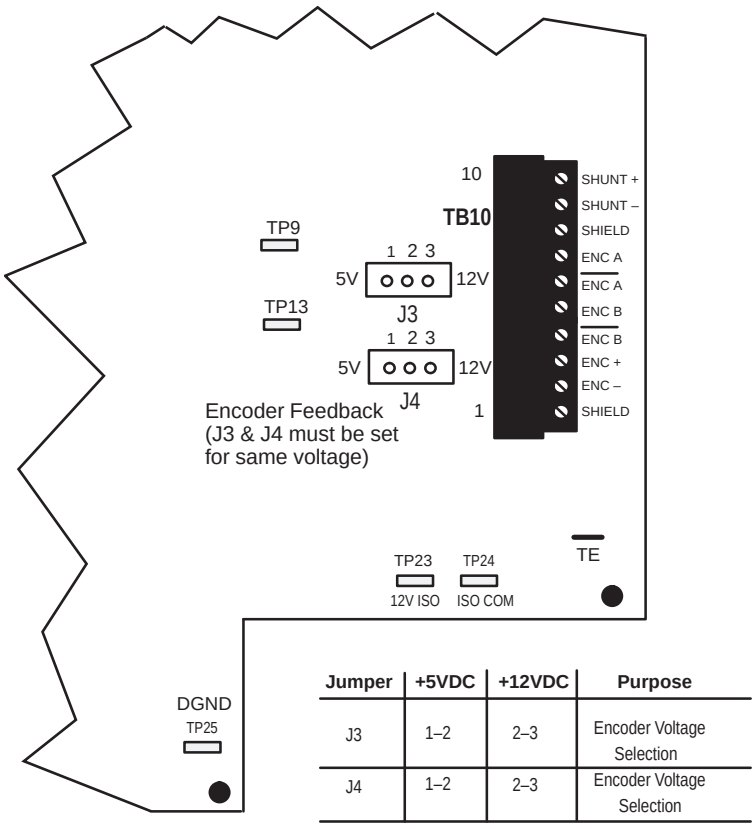
Figure 55 - Encoder Power Wiring



Important: Control Interface Board jumpers JP3 & JP4 must be set for the voltage level of the encoder output.

The 1336 PLUS, PLUS II, FORCE, and IMPACT drives have LxE encoder I/O boards. The 1336 FORCE also has an additional encoder terminal location on the main control board, designated by TB10.

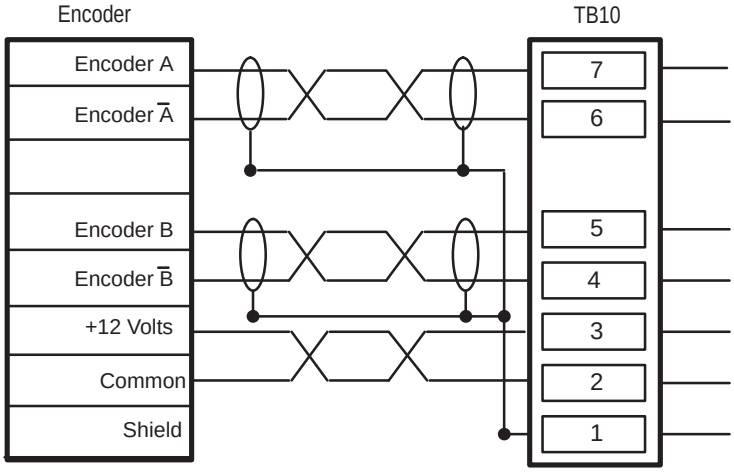
Figure 56 - 1336 FORCE Drive Main Control Board Encoder Terminal TB10



Jumper	+5VDC	+12VDC	Purpose
J3	1–2	2–3	Encoder Voltage Selection
J4	1–2	2–3	Encoder Voltage Selection

The 1336 FORCE drive encoder connections are made at terminal block TB10 on the main control board as detailed in Figure 57.

Figure 57 - 1336 FORCE Drive Encoder Connections

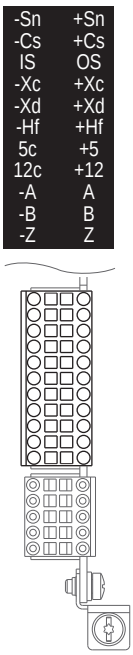


PowerFlex 750-Series Drives

The PowerFlex 750-Series drives can use the universal feedback encoder, single incremental encoder, or dual incremental encoder.

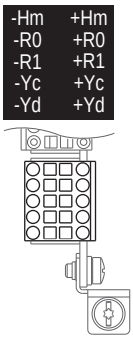
Universal Feedback Encoder

Table 65 - Universal Feedback Encoder Option Module TB1 Terminal Designations



Terminal	Name	Description
-Sn	Sine (–)	Negative sine signal
+Sn	Sine (+)	Positive sine signal
-Cs	Cosine (–)	Negative cosine signal
+Cs	Cosine (+)	Positive cosine signal
Is	Inner shield	Heidenhain inner shield terminal
Os	Outer shield	Cable shield terminal
-Xc	Channel X clock (–)	Negative clock terminal (channel X)
+Xc	Channel X clock (+)	Positive clock terminal (channel X)
-Xd	Channel X data (–)	Negative data terminal (channel X)
+Xd	Channel X data (+)	Positive data terminal (channel X)
-Hf	Heidenhain supply feedback (–)	For incremental feedback applications, tie terminal -Hf to 5c and terminal +Hf to +5 for proper voltage regulation.
+Hf	Heidenhain supply feedback (+)	
5c	Common	+5V common
+5	+5 volt DC power	Power supply for encoder 250 mA
12c	Common	+12V common
+12	+12 volt DC power	Power supply for encoder (10.5V at 250 mA)
-A	Encoder A (NOT)	Single channel or quadrature A input or encoder output.
A	Encoder A	
-B	Encoder B (NOT)	Quadrature B input or encoder output.
B	Encoder B	
-Z	Encoder Z (NOT)	Pulse, marker or registration input or encoder output.
Z	Encoder Z	

Table 66 - Universal Feedback Encoder Option Module TB2 Terminal Designations



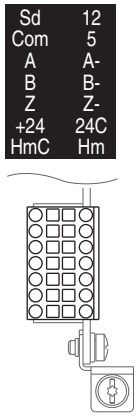
Terminal	Name	Description
-Hm	Home input (–)	12V DC at 9 mA to 24V DC at 40 mA
+Hm	Home input (+)	
-R0	Registration input 0 (–)	Positive and negative encoder registration terminals. 12V DC at 9 mA to 24V DC at 40 mA
+R0	Registration input 0 (+)	
-R1	Registration input 1 (–)	
+R1	Registration input 1 (+)	
-Yc	Channel Y clock (–)	Negative clock terminal (channel Y)
+Yc	Channel Y clock (+)	Positive clock terminal (channel Y)
-Yd	Channel Y data (–)	Negative data terminal (channel Y)
+Yd	Channel Y data (+)	Positive data terminal (channel Y)

IMPORTANT Only one linear feedback device can be connected to the option module. Wire the device to either channel X on TB1 or channel Y on TB2.

For more information on the universal feedback encoder specifications, refer to the PowerFlex 750-Series AC Drives Programming Manual, Appendix C, publication 750-PM001.

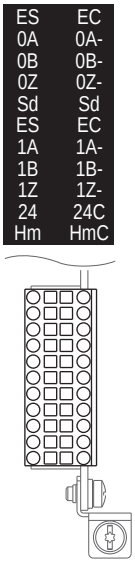
Single and Dual Incremental Encoder

Table 67 - Single Incremental Encoder TB1 Terminal Designations



Terminal	Name	Description
Sd	Shield	Terminating point for wire shields when an EMC plate or conduit box is not installed.
12	+12 volt DC power	Power supply for encoder 250 mA.
Com	Common	+12V and +5V Common
5	+5 volt DC power	Power supply for encoder 250 mA.
A	Encoder A	Single channel or quadrature A input.
A-	Encoder A (NOT)	
B	Encoder B	Quadrature B input.
B-	Encoder B (NOT)	
Z	Encoder Z	Pulse, marker or registration input.
Z-	Encoder Z (NOT)	
+24	+24 Volt	Power source for homing input.
24C	Common	
HmC	Homing input common	Captures the AB edge counter.
Hm	Homing input	

Table 68 - Dual Incremental Encoder Terminal Designations



Terminal	Name	Description
ES	+12 or +5 volt DC power	Power supply for encoder 0, 250 mA.
EC	Common	+12V and +5V encoder 0, common
0A	Encoder 0: A	Single channel or quadrature A input.
0A-	Encoder 0: A (NOT)	
0B	Encoder 0: B	Quadrature B input.
0B-	Encoder 0: B (NOT)	
0Z	Encoder 0: Z	Pulse, marker or registration input.
0Z-	Encoder 0: Z (NOT)	
Sd	Encoder shield	Terminating point for wire shields when an EMC plate or conduit box is not installed.
Sd	Encoder shield	
ES	+12 or +5 volt DC power	Power supply for Encoder 1, 250 mA.
EC	Common	+12V and +5V encoder 1, common
1A	Encoder 1: A	Single channel or quadrature A input.
1A-	Encoder 1: A (NOT)	
1B	Encoder 1: B	Quadrature B input.
1B-	Encoder 1: B (NOT)	
1Z	Encoder 1: Z	Pulse, marker or registration input.
1Z-	Encoder 1: Z (NOT)	
24	+24 Volt	Power source for homing input.
24C	Common	
Hm	Homing input	Captures the AB edge counter.
HmC	Homing input common	

For more information on the single and dual incremental encoder specifications, refer to the PowerFlex 750-Series AC Drives Programming Manual, Appendix D, publication 750-PM001.

Analog Speed Follower and Preset Speed

Drive Configuration

The 1336-Series drives can be configured to use an analog speed follower or preset speed module. They can also be controlled using a communication network.

The information in this chapter covers the hard wired stand-alone configurations of analog speed follower and preset speed.

The PowerFlex 753 embedded I/O control board has three 24V DC and one 115V AC digital inputs. The PowerFlex 755 embedded ethernet control board has one digital input which supports either 24V DC or 115V AC.

- If your 1336-Series drive utilizes more than three 24V DC digital inputs, we recommend you migrate the I/O using one of the PowerFlex 750-Series 24V DC I/O option modules.
- If your 1336-Series drive utilizes more than one 115V AC digital input, we recommend you migrate the I/O using one of the PowerFlex 750-Series 115V AC I/O option modules.

Analog Speed Follower

The PowerFlex 750-Series drive can be configured to use an analog source as its speed reference. The default configuration is port 1, but the drive can be configured to follow a ±10V DC source, 0...10V DC source, or 4...20 mA source with the onboard analog inputs on the PowerFlex 753 drive, or with a PowerFlex 750-Series optional I/O module.

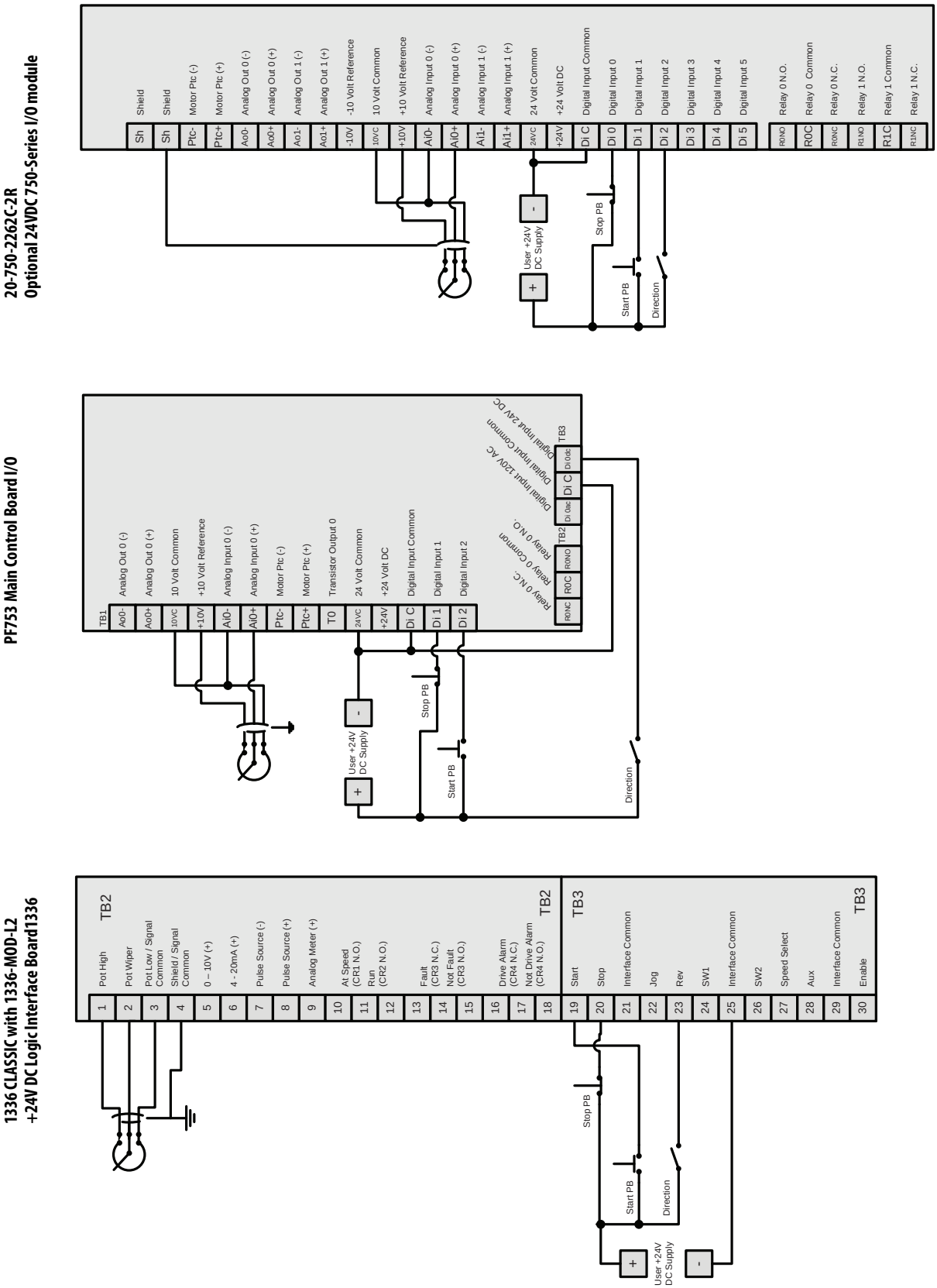
There are three common examples with the 1336-Series drive using different speed-reference inputs along with hard wired **start/stop/direction** control and the equivalent PowerFlex 750-Series configurations.

1336 CLASSIC Drive to PowerFlex 750-Series Drive Comparison

Three-wire Control with Pot Speed Reference

The three-wire control method is **start/stop/direction**. The digital control inputs use an external 24V DC supply, and the analog speed follower reference uses a 10 kΩ potentiometer wired to the drive's internal 10V DC power supply. See Figure 58 on page 136.

Figure 58 - 3-wire Control, Pot Speed Reference Wiring Example



Three-wire Control Parameter Comparison

The following minimum parameters are required to configure the PowerFlex 750-Series drive motor attributes for the three-wire with analog speed reference control method.

Table 69 - 1336 CLASSIC to PowerFlex 753 Drive (using main control board I/O)

IMPORTANT Shaded table cells indicate factory default settings. Verify these settings if the drive is not new, or if you have never set the parameters to the drive defaults.

1336 CLASSIC Drive Parameters			PowerFlex 753 Drive Parameters		
No.	**Name**	**Value**	**No.**	**Name**	**Value**
18/20	Base Volts/Maximum Volts	460	25	Motor NP Volts	460
			26	Motor NP Amps	1.6
17	Base Frequency	60	27	Motor NP Hertz	60
			28	Motor NP rpm	1785
			30	Motor NP Power	1
			29	Mtr NP Pwr Units	0-Hp
41	Motor Type	0 - (Induction)	35	Motor Ctrl Mode	1-Induction SV
			300	Speed Units	0-Hz
16	Minimum Frequency	0.0	522 (1)	Min Fwd Speed	0.0
			523 (1)	Min Rev Speed	0.0
19	Maximum Frequency	60	520 (1)	Max Fwd Speed	Motor NP Hz/rpm x 1
			521 (1)	Max Rev Speed	Motor NP Hz/rpm x -1
5	Frequency Select 1	5 - (Remote Pot)	545	Spd Ref A Sel	Port 0 (P260)
			547	Spd Ref A AnlgHi	Max Fwd Spd (P520)
			548	Spd Ref A AnlgLo	0.0
7	Accel Time 1	10.0	535	Accel Time 1	10.0
8	Decel Time 1	10.0	537	Decel Time 1	10.0
21	Local Run	1	261	Anlg In0 Hi	10.0
22	Local Reverse	1	262	Anlg In0 Lo	0.0
23	Local Jog	1	158	DI Stop	Port 0 (P220) Input 1
26	Preset/2nd Accel	0	161	DI Start	Port 0 (P220) Input 2
39	Clear Fault	1	162	DI Fwd Reverse	Port 0 (P220) Input 0

(1) The PowerFlex 753 drive offers parameters for speed direction (forward and reverse) that are not available in the 1336 CLASSIC drives.

P in all parentheses is an abbreviation for parameter.

Table 70 - 1336 Classic to PowerFlex 750-Series Drive (using optional I/O module)

IMPORTANT Shaded table cells indicate factory default settings. Verify these settings if the drive is not new, or if you have never set the parameters to the drive defaults.

1336 CLASSIC Drive Parameters			PowerFlex 750-Series Drive Parameters (1)		
No.	**Name**	**Value**	**No.**	**Name**	**Value**
18/20	Base Volts/Maximum Volts	460	25	Motor NP Volts	460
			26	Motor NP Amps	1.6
17	Base Frequency	60	27	Motor NP Hertz	60
			28	Motor NP rpm	1785
			30	Motor NP Power	1
			29	Mtr NP Pwr Units	0-Hp
41	Motor Type	0 - (Induction)	35	Motor Ctrl Mode	1-Induction SV
			300	Speed Units	0-Hz
16	Minimum Frequency	0.0	522 (2)	Min Fwd Speed	0.0
			523 (2)	Min Rev Speed	0.0
19	Maximum Frequency	60	520 (2)	Max Fwd Speed	Motor NP Hz/rpm x 1
			521 (2)	Max Rev Speed	Motor NP Hz/rpm x -1
5	Frequency Select 1	5 - (Remote Pot)	545	Spd Ref A Sel	Port 4 (P50)
			547	Spd Ref A AnlgHi	Max Fwd Spd (P520)
			548	Spd Ref A AnlgLo	0.0
7	Accel Time 1	10.0	535	Accel Time 1	10.0
8	Decel Time 1	10.0	537	Decel Time 1	10.0
21	Local Run	1	51	I/O Module Anlg In0 Hi	10.0
22	Local Reverse	1	52	I/O Module Anlg In0 Low	0.0
23	Local Jog	1	158	DI Stop (1)	Port 4 (P1) Input 0
26	Preset/2nd Accel	0	161	DI Start (1)	Port 4 (P1) Input 1
39	Clear Fault	1	162	DI Fwd Reverse (1)	Port 4 (P1) Input 2

(1) The optional I/O module is installed in slot 4.

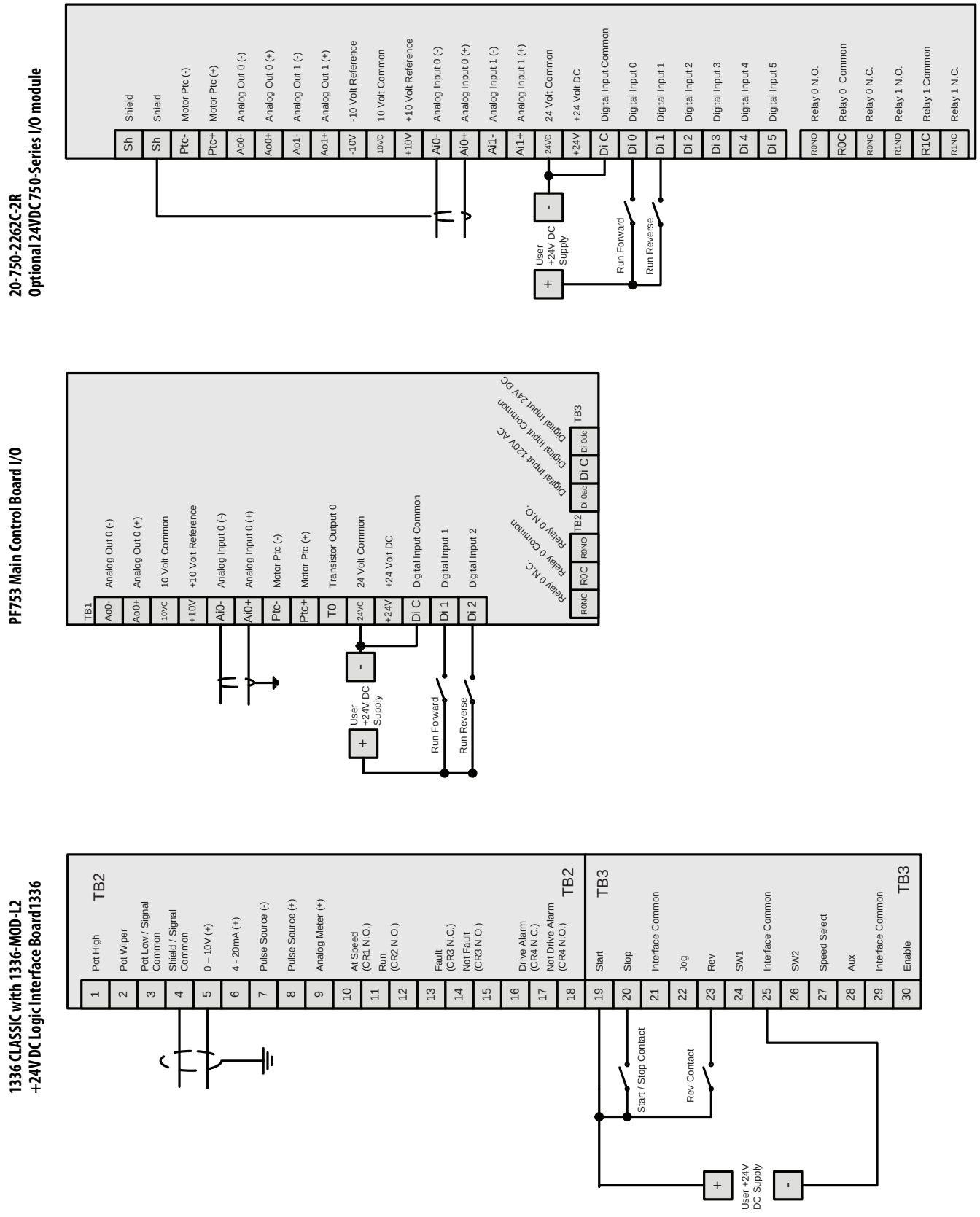
(2) The PowerFlex 750-Series drive offers parameters for speed direction (forward and reverse) that are not available in the 1336 CLASSIC drives.

P in all parentheses is an abbreviation for parameter.

Two-wire Control with Analog Input Speed Reference

The two-wire control method is **run fwd/run rev**. The digital control inputs use an external 24V DC supply, and the analog input speed comes from a 0...10V or 4...20 mA external reference. See Figure 59 on page 139.

Figure 59 - 2-wire Control, Analog Input Reference Wiring Example



Two-wire Control Parameter Comparison

The following minimum parameters are required to configure the PowerFlex 750-Series drive motor attributes for the two-wire with analog speed reference control method.

Table 71 - 1336 CLASSIC to PowerFlex 753 Drive (using main control board I/O)

IMPORTANT Shaded table cells indicate factory default settings. Verify these settings if the drive is not new, or if you have never set the parameters to the drive defaults.

1336 CLASSIC Drive Parameters			PowerFlex 753 Drive Parameters		
No.	**Name**	**Value**	**No.**	**Name**	**Value**
18/20	Base Volts/Maximum Volts	460	25	Motor NP Volts	460
			26	Motor NP Amps	1.6
17	Base Frequency	60	27	Motor NP Hertz	60
			28	Motor NP rpm	1785
			30	Motor NP Power	1
			29	Mtr NP Pwr Units	0-Hp
41	Motor Type	0 - Induction	35	Motor Ctrl Mode	1-Induction SV
			300	Speed Units	0-Hz
16	Minimum Frequency	0.0	522 (1)	Min Fwd Speed	0.0
			523 (1)	Min Rev Speed	0.0
19	Maximum Frequency	60	520 (1)	Max Fwd Speed	Motor NP Hz/rpm x 1
			521 (1)	Max Rev Speed	Motor NP Hz/rpm x -1
5	Frequency Select 1	1- (0…10 Volts)	545	Spd Ref A Sel	Port 0 (P260)
			547	Spd Ref A AnlgHi	Max Fwd Spd (P520)
			548	Spd Ref A AnlgLo	0.0
7	Accel Time 1	10.0	535	Accel Time 1	10.0
8	Decel Time 1	10.0	537	Decel Time 1	10.0
26	Preset/2nd Accel	0	261	Anlg In0 Hi	10.0
39	Clear Fault	1	262	Anlg In0 Lo	0.0
21	Local Run	1	164	DI Run Forward	Port 0 (P220) Input 1
22	Local Reverse	1	165	DI Run Reverse	Port 0 (P220) Input 2

(1) The PowerFlex 753 drive offers parameters for speed direction (forward and reverse) that are not available in the 1336 CLASSIC drives.

P in all parentheses is an abbreviation for parameter.

Table 72 - 1336 CLASSIC to PowerFlex 750-Series Drive (using optional I/O module)

IMPORTANT Shaded table cells indicate factory default settings. Verify these settings if the drive is not new, or if you have never set the parameters to the drive defaults.

1336 CLASSIC Drive Parameters			PowerFlex 750-Series Drive Parameters (1)		
No.	**Name**	**Value**	**No.**	**Name**	**Value**
18/20	Base Volts/Maximum Volts	460	25	Motor NP Volts	460
			26	Motor NP Amps	1.6
17	Base Frequency	60	27	Motor NP Hertz	60
			28	Motor NP rpm	1785
			30	Motor NP Power	1
			29	Mtr NP Pwr Units	0-Hp
41	Motor Type	0 - Induction	31	Motor Ctrl Mode	1-Induction SV
			300	Speed Units	0-Hz
16	Minimum Frequency	0.0	522 (2)	Min Fwd Speed	0.0
			523 (2)	Min Rev Speed	0.0
19	Maximum Frequency	60	520 (2)	Max Fwd Speed	Motor NP Hz/rpm x 1
			521 (2)	Max Rev Speed	Motor NP Hz/rpm x -1
5	Frequency Select 1	1- (0…10 Volts)	545	Spd Ref A Sel	Port 4 (P50)
			547	Spd Ref A AnlgHi	Max Fwd Spd (P520)
			548	Spd Ref A AnlgLo	0.0
7	Accel Time 1	10.0	535	Accel Time 1	10.0
8	Decel Time 1	10.0	537	Decel Time 1	10.0
21	Local Run	1	51	Anlg In0 Hi (I/O Module)	10.0
22	Local Reverse	1	52	Anlg In0 Low (I/O Module)	0.0
23	Local Jog	1	164	DI Run Forward (2)	Port 4 (P1) Input 0
26	Preset/2nd Accel	0	165	DI Run Reverse (2)	Port 4 (P1) Input 1
39	Clear Fault	1			

(1) The optional I/O module is installed in slot 4.

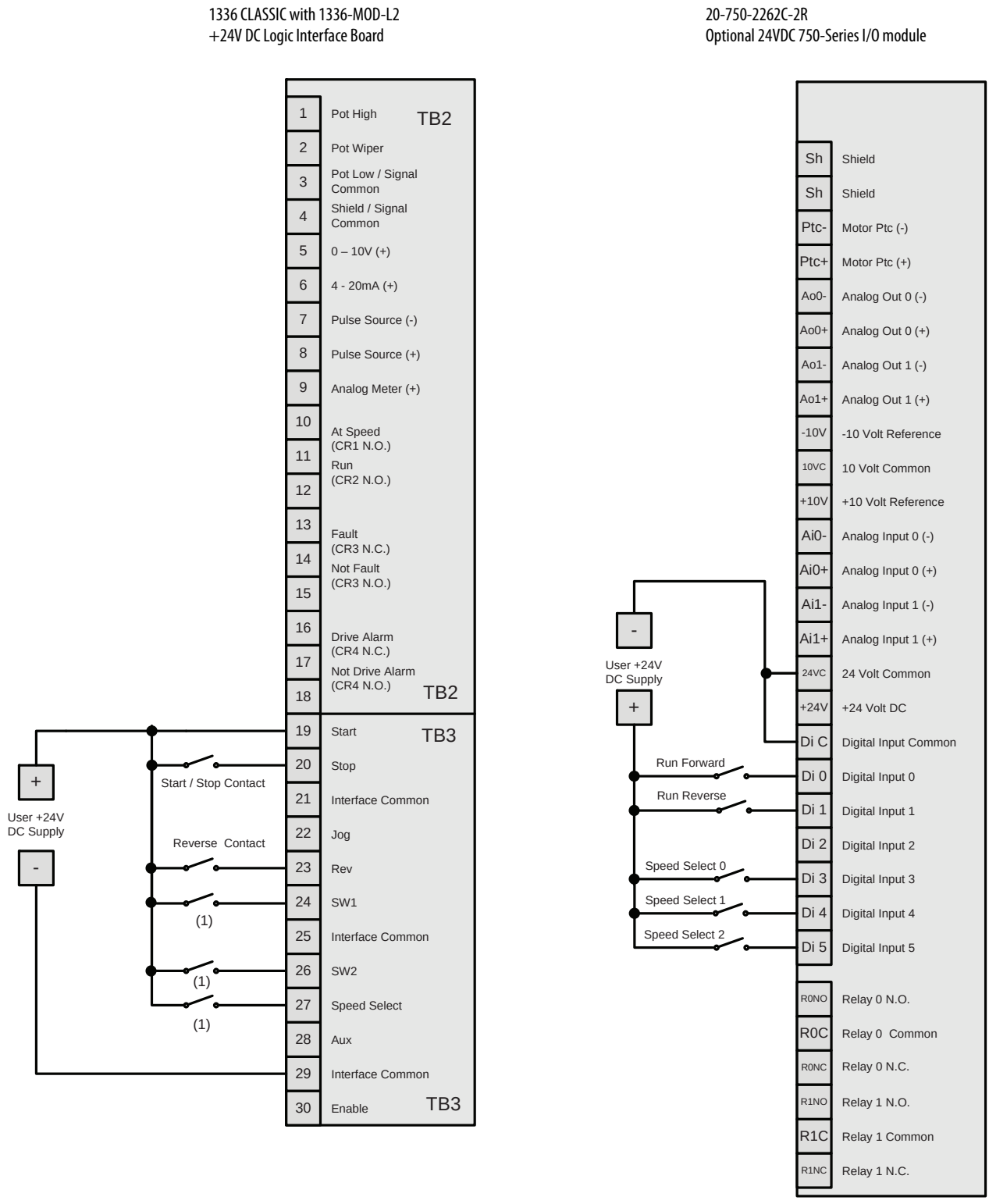
(2) The PowerFlex 750-Series drive offers parameters for speed direction (forward and reverse) that are not available in the 1336 CLASSIC drives.

P in all parentheses is an abbreviation for parameter.

Two-wire Control with Preset Speeds

The two-wire control method is **run fwd/run rev** with preset preference. The digital control inputs use an external 24V DC supply, and the speed reference is determined by the three speed-select digital inputs. See Figure 60 on page 142.

Figure 60 - 2-wire Control, Preset Speeds Wiring Example



(1) Refer to the 1336 Adjustable Frequency AC Drive Programming Manual, publication 1336-PM000, Pages 2-20 to 2-21, for description of Preset Frequencies.

Two-wire Control Parameter Comparison

The following minimum parameters are required to configure the PowerFlex 750-Series drive motor attributes for the two-wire with analog speed reference control method.

Table 73 - 1336 CLASSIC to PowerFlex 750-Series Drive (using optional I/O module)

IMPORTANT Shaded table cells indicate factory default settings. Verify these settings if the drive is not new, or if you have never set the parameters to the drive defaults.

1336 CLASSIC Drive Parameters			PowerFlex 750-Series Drive Parameters [1]		
No.	**Name**	**Value**	**No.**	**Name**	**Value**
18/20	Base Volts/Maximum Volts	460	25	Motor NP Volts	460
			26	Motor NP Amps	1.6
17	Base Frequency	60	27	Motor NP Hertz	60
			28	Motor NP rpm	1785
			30	Motor NP Power	1
			29	Mtr NP Pwr Units	0-Hp
41	Motor Type	0 - Induction	35	Motor Ctrl Mode	1-Induction SV
			300	Speed Units	0-Hz
16	Minimum Frequency	0.0	522 [2]	Min Fwd Speed	0.0
			523 [2]	Min Rev Speed	0.0
19	Maximum Frequency	60	520 [2]	Max Fwd Speed	Motor NP Hz/rpm x 1
			521 [2]	Max Rev Speed	Motor NP Hz/rpm x -1
5	Frequency Select 1	0	545	Spd Ref A Sel	Port 0 Ref
			550	Spd Ref B Sel	Speed Ref B Stpt
			547	Spd Ref A AnlgHi	Max Fwd Spd (P520)
			548	Spd Ref A AnlgLo	0.0
27	Preset Frequency 1	1/12 x P19	571	Preset Speed 1	1/12 x (P27 or P28)
28	Preset Frequency 2	1/6 x P19	572	Preset Speed 2	1/6 x (P27 or P28)
29	Preset Frequency 3	1/3 x P19	573	Preset Speed 3	1/3 x (P27 or P28)
73	Preset Frequency 4	1/2 x P19	574	Preset Speed 4	1/2 x (P27 or P28)
74	Preset Frequency 5	2/3 x P19	575	Preset Speed 5	2/3 x (P27 or P28)
75	Preset Frequency 6	5/6 x P19	576	Preset Speed 6	5/6 x (P27 or P28)
76	Preset Frequency 7	P19	577	Preset Speed 7	(P27 or P28)
7	Accel Time 1	10.0	535	Accel Time 1	10.0
8	Decel Time 1	10.0	537	Decel Time 1	10.0
			261	Anlg In0 Hi	10.0
21	Local Run	1	262	Anlg In0 Lo	0.0
22	Local Reverse	1	164	DI Run Forward	Port 4 (P1) Input 0
23	Local Jog	1	165	DI Run Reverse	Port 4 (P1) Input 1

1336 CLASSIC Drive Parameters				PowerFlex 750-Series Drive Parameters (1)		
No.	**Name**	**Value**		**No.**	**Name**	**Value**
26	Preset/2nd Accel	0		173	DI Speed Sel 0	Port 4 (P1) Input 3
39	Clear Fault	1		174	DI Speed Sel 1	Port 4 (P1) Input 4
72	Activate P73-76	1		175	DI Speed Sel 2	Port 4 (P1) Input 5

(1) The optional I/O module is installed in slot 4.
(2) The PowerFlex 750-Series drive offers parameters for speed direction (forward and reverse) that are not available in the 1336 CLASSIC drives.

P in all parentheses is an abbreviation for parameter.

Preset Speeds

The following tables depict the binary pattern for the drive speed-select digital inputs.

Table 74 - PowerFlex 755 Drive Digital Input (DI) Preset Speeds

PowerFlex 755 Drive Preset Speeds			
DI Speed Sel 2	DI Speed Sel 1	DI Speed Sel 0	Auto Reference Source
0	0	0	Reference A
0	0	1	Reference A
0	1	0	Reference B
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

IMPORTANT Speed-select input functionality changed with the PowerFlex 755 drive, which impacts how a 1336 CLASSIC drive is migrated.

Table 75 - 1336 CLASSIC Drive Preset Speeds (Parameter 26 Set to 0)

SW1	SW2	Speed Select	Parameter 72	Accel at Accel Time 1, Parameter 7 Decel at Decel Time 1, Parameter 8 Run at:
False	False	False	Off	Frequency Select 1, Parameter 5
True	False	False	Off	Preset Frequency 1, Parameter 27
False	True	False	Off	Preset Frequency 2, Parameter 28
True	True	False	Off	Preset Frequency 3, Parameter 29
False	False	True	Off	Frequency Select 2, Parameter 6
True	False	True	Off	Preset Frequency 1, Parameter 27
False	True	True	Off	Preset Frequency 2, Parameter 28
True	True	True	Off	Preset Frequency 3, Parameter 29
False	False	False	On	Frequency Select 1, Parameter 5

SW1	SW2	Speed Select	Parameter 72	Accel at Accel Time 1, Parameter 7 Decel at Decel Time 1, Parameter 8 Run at:
True	False	False	On	Preset Frequency 1, Parameter 27
False	True	False	On	Preset Frequency 2, Parameter 28
True	True	False	On	Preset Frequency 3, Parameter 29
False	False	True	On	Frequency Select 4, Parameter 73
True	False	True	On	Preset Frequency 5, Parameter 74
False	True	True	On	Preset Frequency 6, Parameter 75
True	True	True	On	Preset Frequency 7, Parameter 76

Table 76 - 1336 CLASSIC Drive Preset Speeds (Parameter 26 Set to 1)

SW1	SW2	Speed Select	Parameter 72	Run at Frequency Select 1, Parameter 5 Accel at: Decel at:
False	False	False	Off	Accel Time 1, Parameter 7 Decel Time 1, Parameter 8
True	False	False	Off	Accel Time 2, Parameter 30 Decel Time 1, Parameter 8
False	True	False	Off	Accel Time 1, Parameter 7 Decel Time 2, Parameter 31
True	True	False	Off	Accel Time 2, Parameter 30 Decel Time 2, Parameter 31
SW1	**SW2**	**Speed Select**	**Parameter 72**	**Run at Frequency Select 2, Parameter 6 Accel at: Decel at:**
False	False	True	Off	Accel Time 1, Parameter 7 Decel Time 1, Parameter 8
True	False	True	Off	Accel Time 2, Parameter 30 Decel Time 1, Parameter 8
False	True	True	Off	Accel Time 1, Parameter 7 Decel Time 2, Parameter 31
True	True	True	Off	Accel Time 2, Parameter 30 Decel Time 2, Parameter 31
SW1	**SW2**	**Speed Select**	**Parameter 72**	**Run at Frequency Select 1, Parameter 5 Accel at: Decel at:**
False	False	False	On	Accel Time 1, Parameter 7 Decel Time 1, Parameter 8
True	False	False	On	Accel Time 2, Parameter 30 Decel Time 1, Parameter 8
False	True	False	On	Accel Time 1, Parameter 7 Decel Time 2, Parameter 31
True	True	False	On	Accel Time 2, Parameter 30 Decel Time 2, Parameter 31
SW1	**SW2**	**Speed Select**	**Parameter 72**	**Run at Frequency Select 4, Parameter 73 Accel at: Decel at:**

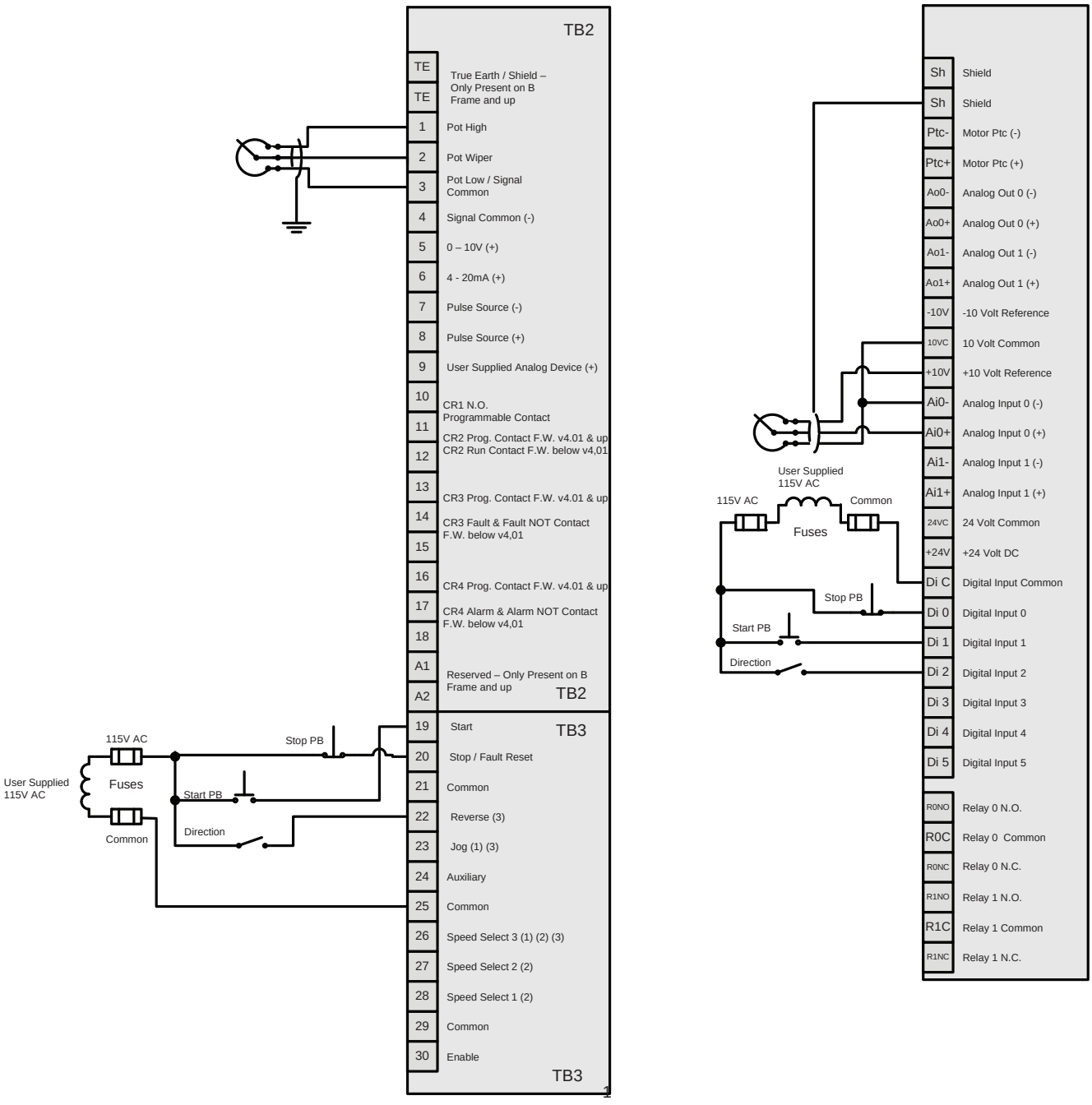
SW1	SW2	Speed Select	Parameter 72	Run at Frequency Select 1, Parameter 5 Accel at: Decel at:
False	False	True	On	Accel Time 1, Parameter 7 Decel Time 1, Parameter 8
True	False	True	On	Accel Time 2, Parameter 30 Decel Time 1, Parameter 8
False	True	True	On	Accel Time 1, Parameter 7 Decel Time 2, Parameter 31
True	True	True	On	Accel Time 2, Parameter 30 Decel Time 2, Parameter 31

1336 PLUS Drive to PowerFlex 750-Series Drive Comparison

Three-wire Control with Pot Speed Reference

The three-wire control method is **start/stop/direction**. The digital control inputs use an external 24V DC supply, and the analog speed follower reference uses a 10 kΩ potentiometer wired to the drive's internal 10V DC power supply. See Figure 61 on page 147.

Figure 61 - 3-wire Control, Pot Speed Reference Wiring Example



(1) Refer to the 1336 PLUS Adjustable Frequency AC Drive with Sensorless Vector User Manual, publication 1336S-UM001, page 2-28, for Input Mode details.
(2) See Speed Select Table 2.H in the 1336 PLUS Adjustable Frequency AC Drive with Sensorless Vector User Manual, publication 1336S-UM001, page 2-26.
(3) Input Mode = 2 (Three-wire Control with Single-source Reversing).

Three-wire Control Parameter Comparison

The following minimum parameters are required to configure the PowerFlex 750-Series drive motor attributes for the three-wire with analog speed reference control method.

Table 77 - 1336 PLUS to PowerFlex 750-Series Drive (using optional I/O module)

IMPORTANT Shaded table cells indicate factory default settings. Verify these settings if the drive is not new, or if you have never set the parameters to the drive defaults.

1336 PLUS Drive Parameters			PowerFlex 750-Series Drive Parameters (1)		
No.	**Name**	**Value**	**No.**	**Name**	**Value**
18/20/190	Base Volts/Maximum Volts/Motor NP Volts	460	25	Motor NP Volts	460
191	Motor NP Amps (v4.01)	1.6	26	Motor NP Amps	1.6
17/178	Base Frequency/Motor NP Hertz	60	27	Motor NP Hertz	60
177	Motor NP rpm	1785	28	Motor NP rpm	1785
			30	Motor NP Power	1
			29	Mtr NP Pwr Units	0-Hp
41	Motor Type	0 - (Induction)	35	Motor Ctrl Mode	1-Induction SV
			300	Speed Units	0-Hz
16	Minimum Frequency	0.0	522 (2)	Min Fwd Speed	0.0
			523 (2)	Min Rev Speed	0.0
19	Maximum Frequency	60	520 (2)	Max Fwd Speed	Motor NP Hz/rpm x 1
			521 (2)	Max Rev Speed	Motor NP Hz/rpm x -1
5	Freq Select 1	1 - (Remote Pot)	545	Spd Ref A Sel	Port 4 (P50)
238	Set 0-10 Vlt Hi (v4.01)	100%	547	Spd Ref A AnlgHi	Max Fwd Spd (P520)
237	Set 0-10 Vlt Lo (v4.01)	0%	548	Spd Ref A AnlgLo	0.0
7	Accel Time 1	10.0	535	Accel Time 1	10.0
8	Decel Time 1	10.0	537	Decel Time 1	10.0
			51	Anlg In0 Hi (I/O Module)	10.0
			52	Anlg In0 Low (I/O Module)	0.0
			158	DI Stop (1)	Port 4 (P1) Input 0
21	Input Mode	2 - (Reverse, Jog, Speed Select 3)	161	DI Start (1)	Port 4 (P1) Input 1
39	Clear Fault Mode	1	162	DI Fwd Reverse (1)	Port 4 (P1) Input 2

(1) The optional I/O module is installed in slot 4.

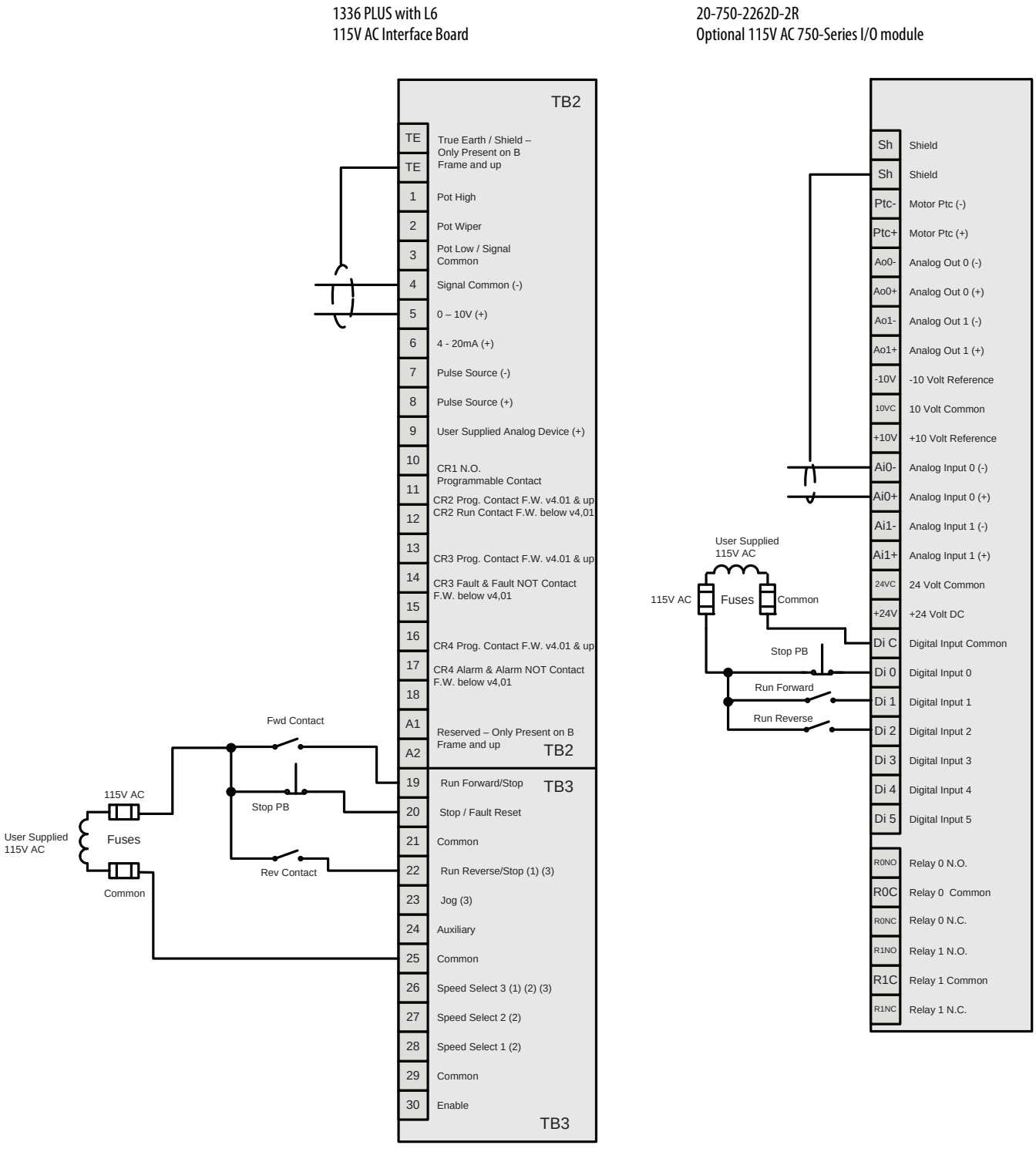
(2) The PowerFlex 750-Series drive offers parameters for speed direction (forward and reverse) that are not available in the 1336 PLUS drives.

P in all parentheses is an abbreviation for parameter.

Two-wire Control with Analog Input Speed Reference

The two-wire control method is **run fwd/run rev**. The digital control inputs use an external 24V DC supply, and the analog input speed comes from a 0...10V or 4...20 mA external reference. See Figure 62 on page 150.

Figure 62 - 2-wire Control, Analog Input Reference Wiring Example



(1) Refer to the 1336 PLUS Adjustable Frequency AC Drive with Sensorless Vector User Manual, publication 1336S-UM001, page 2-29, for Input Mode details.
(2) See Speed Select Table 2.H in the 1336 PLUS Adjustable Frequency AC Drive with Sensorless Vector User Manual, publication 1336S-UM001, page 2-26.
(3) Input Mode = 21 (Two-wire Control with Single-source Control).

Two-wire Control Parameter Comparison

The following minimum parameters are required to configure the PowerFlex 750-Series drive motor attributes for the two-wire with analog speed reference control method.

Table 78 - 1336 PLUS to PowerFlex 750-Series Drive (using optional I/O module)

IMPORTANT Shaded table cells indicate factory default settings. Verify these settings if the drive is not new, or if you have never set the parameters to the drive defaults.

1336 PLUS Drive Parameters			PowerFlex 750-Series Drive Parameters (1)		
No.	**Name**	**Value**	**No.**	**Name**	**Value**
18/20/190	Base Volts/Maximum Volts/Motor NP Volts	460	25	Motor NP Volts	460
191	Motor NP Amps (v4.01)	1.6	26	Motor NP Amps	1.6
17/178	Base Frequency/Motor NP Hertz	60	27	Motor NP Hertz	60
177	Motor NP rpm	1785	28	Motor NP rpm	1785
			30	Motor NP Power	1
			29	Mtr NP Pwr Units	0-Hp
41	Motor Type	0 - (Induction)	31	Motor Ctrl Mode	1-Induction SV
			300	Speed Units	0-Hz
16	Minimum Frequency	0.0	522 (2)	Min Fwd Speed	0.0
			523 (2)	Min Rev Speed	0.0
19	Maximum Frequency	60	520 (2)	Max Fwd Speed	Motor NP Hz/rpm x 1
			521 (2)	Max Rev Speed	Motor NP Hz/rpm x -1
5	Freq Select 1	2 - (0...10 Volts)	545	Spd Ref A Sel	Port 4 (P50)
238	Set 0-10 Vlt Hi (v4.01)	100%	547	Spd Ref A AnlgHi	Max Fwd Spd (P520)
237	Set 0-10 Vlt Lo (v4.01)	0%	548	Spd Ref A AnlgLo	0.0
7	Accel Time 1	10.0	535	Accel Time 1	10.0
8	Decel Time 1	10.0	537	Decel Time 1	10.0
			51	Anlg In0 Hi (I/O Module)	10.0
			52	Anlg In0 Low (I/O Module)	0.0
			158	DI Stop	Port 4 (P1) Input 0
21	Input Mode	21 - (Jog, Speed Select 3)	164	DI Run Forward (2)	Port 4 (P1) Input 1
39	Clear Fault Mode	1	165	DI Run Reverse (2)	Port 4 (P1) Input 2

(1) The optional I/O module is installed in slot 4.

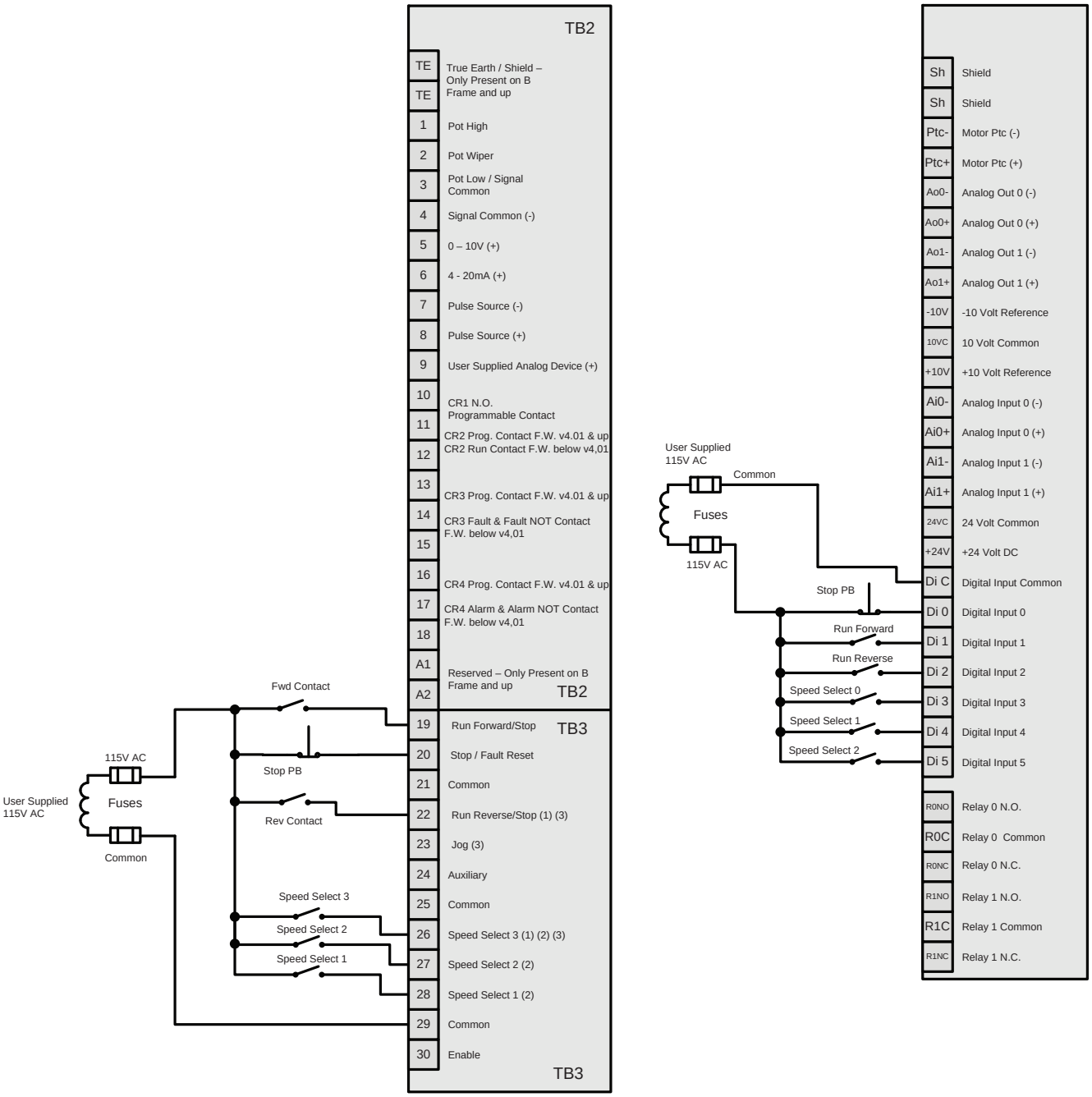
(2) The PowerFlex 750-Series drive offers parameters for speed direction (forward and reverse) that are not available in the 1336 PLUS drives.

P in all parentheses is an abbreviation for parameter.

Two-wire Control with Preset Speeds

The two-wire control method is **run fwd/run rev** with preset preference. The digital control inputs use an external 24V DC supply, and the speed reference is determined by the three speed-select digital inputs. Figure 63 on page 153.

Figure 63 - 2-wire Control, Preset Speeds Wiring Example



(1) Refer to the 1336 PLUS Adjustable Frequency AC Drive with Sensorless Vector User Manual, publication 1336S-UM001, page 2-29, for Input Mode details.
(2) See Speed Select Table 2.H in the 1336 PLUS Adjustable Frequency AC Drive with Sensorless Vector User Manual, publication 1336S-UM001, page 2-26.
(3) Input Mode = 21 (Two-wire Control with Single-source Control).

Two-wire Control Parameter Comparison

The following minimum parameters are required to configure the PowerFlex 750-Series drive motor attributes for the two-wire with analog speed reference control method.

Table 79 - 1336 PLUS to PowerFlex 750-Series Drive (using optional I/O module)

IMPORTANT Shaded table cells indicate factory default settings. Verify these settings if the drive is not new, or if you have never set the parameters to the drive defaults.

1336 PLUS Drive Parameters		
No.	**Name**	**Value**
18/20/190	Base Volts/Maximum Volts/Motor NP Volts (v4.01)	460
191	Motor NP Amps (v4.01)	1.6
17/178	Base Frequency/Motor NP Hertz	60
177	Motor NP rpm	1785
41	Motor Type	0 - Induction
16	Minimum Frequency	0.0
19	Maximum Frequency	60
5	Frequency Select 1	6 - (Adapter 1)
27	Preset Frequency 1	1/12 x P19
28	Preset Frequency 2	1/6 x P19
29	Preset Frequency 3	1/3 x P19
73	Preset Frequency 4	1/2 x P19
74	Preset Frequency 5	2/3 x P19
75	Preset Frequency 6	5/6 x P19
76	Preset Frequency 7	1.0 x P19
7	Accel Time 1	10.0
8	Decel Time 1	10.0

PowerFlex 750-Series Drive Parameters [1]		
No.	**Name**	**Value**
25	Motor NP Volts	460
26	Motor NP Amps	1.6
27	Motor NP Hertz	60
28	Motor NP rpm	1785
30	Motor NP Power	1
29	Mtr NP Pwr Units	0-Hp
35	Motor Ctrl Mode	1-Induction SV
300	Speed Units	0-Hz
522 [2]	Min Fwd Speed	0.0
523 [2]	Min Rev Speed	0.0
520 [2]	Max Fwd Speed	Motor NP Hz/rpm x 1
521 [2]	Max Rev Speed	Motor NP Hz/rpm x -1
545	Spd Ref A Sel	Port 0 Ref
550	Spd Ref B Sel	Speed Ref B Stpt
547	Spd Ref A AnlgHi	Max Fwd Spd (P520)
548	Spd Ref A AnlgLo	0.0
571	Preset Speed 1	1/12 x (P27 or P28)
572	Preset Speed 2	1/6 x (P27 or P28)
573	Preset Speed 3	1/3 x (P27 or P28)
574	Preset Speed 4	1/2 x (P27 or P28)
575	Preset Speed 5	2/3 x (P27 or P28)
576	Preset Speed 6	5/6 x (P27 or P28)
577	Preset Speed 7	(P27 or P28)
535	Accel Time 1	10.0
537	Decel Time 1	10.0
261	Anlg In0 Hi	10.0
262	Anlg In0 Lo	0.0
158	DI Stop	Port 4 (P1) Input 0
164	DI Run Forward	Port 4 (P1) Input 1

1336 PLUS Drive Parameters				PowerFlex 750-Series Drive Parameters (1)		
No.	**Name**	**Value**		**No.**	**Name**	**Value**
				165	DI Run Reverse	Port 4 (P1) Input 2
				173	DI Speed Sel 0	Port 4 (P1) Input 3
21	Input Mode	21 - (Jog, Speed Select 3)		174	DI Speed Sel 1	Port 4 (P1) Input 4
39	Clear Fault Mode	1		175	DI Speed Sel 2	Port 4 (P1) Input 5

(1) The optional I/O module is installed in slot 4.

(2) The PowerFlex 750-Series drive offers parameters for speed direction (forward and reverse) that are not available in the 1336 PLUS drives.

P in all parentheses is an abbreviation for parameter.

Preset Speeds

The following tables depict the binary pattern for the drive speed-select digital inputs.

Table 80 - PowerFlex 755 Drive Digital Input (DI) Preset Speeds

1336 PLUS Drive Preset Speeds				PowerFlex 755 Drive Preset Speeds			
Speed Select 3	Speed Select 2	Speed Select 1	Frequency Source	DI Speed Sel 2	DI Speed Sel 1	DI Speed Sel 0	Auto Reference Source
Open	Open	Open	[Freq Select 1]	0	0	0	Reference A
Open	Open	Closed	[Freq Select 2]	0	0	1	Reference A
Accessed through [Freq Select 2] parameter			[Preset Freq 1]				
Open	Closed	Open	[Preset Freq 2]	0	1	0	Reference B
Open	Closed	Closed	[Preset Freq 3]	0	1	1	Preset Speed 3
Closed	Open	Open	[Preset Freq 4]	1	0	0	Preset Speed 4
Closed	Open	Closed	[Preset Freq 5]	1	0	1	Preset Speed 5
Closed	Closed	Open	[Preset Freq 6]	1	1	0	Preset Speed 6
Closed	Closed	Closed	[Preset Freq 7]	1	1	1	Preset Speed 7

IMPORTANT Speed-select input functionality changed with the PowerFlex 755 drive, which impacts how a 1336 PLUS drive is migrated.

1336 PLUS II Drive to PowerFlex 750-Series Drive Comparison

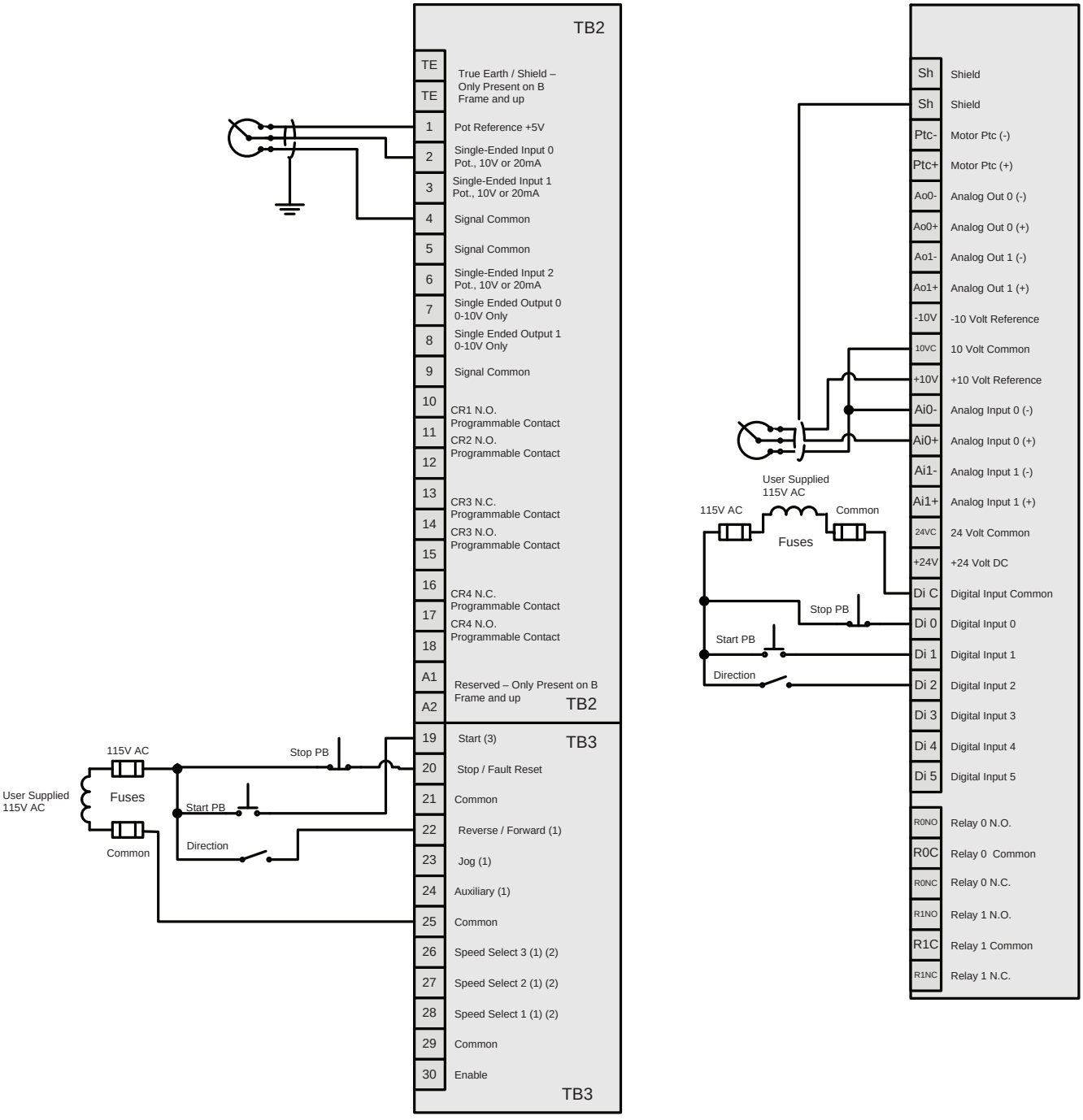
Three-wire Control with Pot Speed Reference

The three-wire control method is **start/stop/direction**. The digital control inputs use an external 24V DC supply, and the analog speed follower reference uses a 10K Ω potentiometer wired to the drive's internal 10V DC power supply. See Figure 64 on page 156.

Figure 64 - 3-wire Control, Pot Speed Reference Wiring Example

1336 PLUS II with Standard Analog Option I/O
& L6 115V AC Interface Board

20-750-2262D-2R
Optional 115V AC 750-Series I/O module



(1) Refer to the 1336 PLUS II Adjustable Frequency AC Drive with Sensorless Vector User Manual, publication 1336F-UM002, page 6-27, for Programmable Input details.
(2) See Speed Select Table 2.H in the 1336 PLUS II Adjustable Frequency AC Drive with Sensorless Vector User Manual, publication 1336F-UM002, page 2-28.
(3) Input Mode = 2 (Three-wire Control – Single-source Reversing).

Three-wire Control Parameter Comparison

The following minimum parameters are required to configure the PowerFlex 750-Series drive motor attributes for the three-wire with analog speed reference control method.

Table 81 - 1336 PLUS II to PowerFlex 750-Series Drive (using optional I/O module)

IMPORTANT Shaded table cells indicate factory default settings. Verify these settings if the drive is not new, or if you have never set the parameters to the drive defaults.

1336 PLUS II Drive Parameters			PowerFlex 750-Series Drive Parameters (1)		
No.	**Name**	**Value**	**No.**	**Name**	**Value**
18/20/190	Base Volts/Maximum Volts/Motor NP Volts	460	25	Motor NP Volts	460
191	Motor NP Amps (v4.01)	1.6	26	Motor NP Amps	1.6
17/178	Base Frequency/Motor NP Hertz	60	27	Motor NP Hertz	60
177	Motor NP rpm	1785	28	Motor NP rpm	1785
			30	Motor NP Power	1
			29	Mtr NP Pwr Units	0-Hp
9	Control Select	1 - (Sens Vector)	35	Motor Ctrl Mode	1-Induction SV
			300	Speed Units	0-Hz
16	Minimum Frequency	0.0	522 (2)	Min Fwd Speed	0.0
			523 (2)	Min Rev Speed	0.0
19/151	Maximum Frequency/Max Speed	60	520 (2)	Max Fwd Speed	Motor NP Hz/rpm x 1
			521 (2)	Max Rev Speed	Motor NP Hz/rpm x -1
5	Freq Select 1	1 - (Analog In 0)	545	Spd Ref A Sel	Port 4 (P50)
			547	Spd Ref A AnlgHi	Max Fwd Spd (P520)
			548	Spd Ref A AnlgLo	0.0
7	Accel Time 1	10.0	535	Accel Time 1	10.0
8	Decel Time 1	10.0	537	Decel Time 1	10.0
238	Anlg In0 Hi	100%	51	Anlg In0 Hi (I/O Module)	10.0
237	Anlg In0 Lo	0%	52	Anlg In0 Low (I/O Module)	0.0
241	Input Mode	2 - (3-wire)	158	DI Stop (1)	Port 4 (P1) Input 0
242	TB3 Term 22 Sel	23 - (Rev-For)	161	DI Start (1)	Port 4 (P1) Input 1
243	TB3 Term 23 Sel	1 - (Jog)	162	DI Fwd Reverse (1)	Port 4 (P1) Input 2
244	TB3 Term 24Sel	12 - (Auxiliary)			
245	TB3 Term 26 Sel	4 - (Speed Sel 3)			
246	TB3 Term 27 Sel	3 - (Speed Sel 2)			
247	TB3 Term 28 Sel	2 - (Speed Sel 1)			

(1) The optional I/O module is installed in slot 4.

(2) The PowerFlex 750-Series drive offers parameters for speed direction (forward and reverse) that are not available in the 1336 PLUS II drives.

P in all parentheses is an abbreviation for parameter.

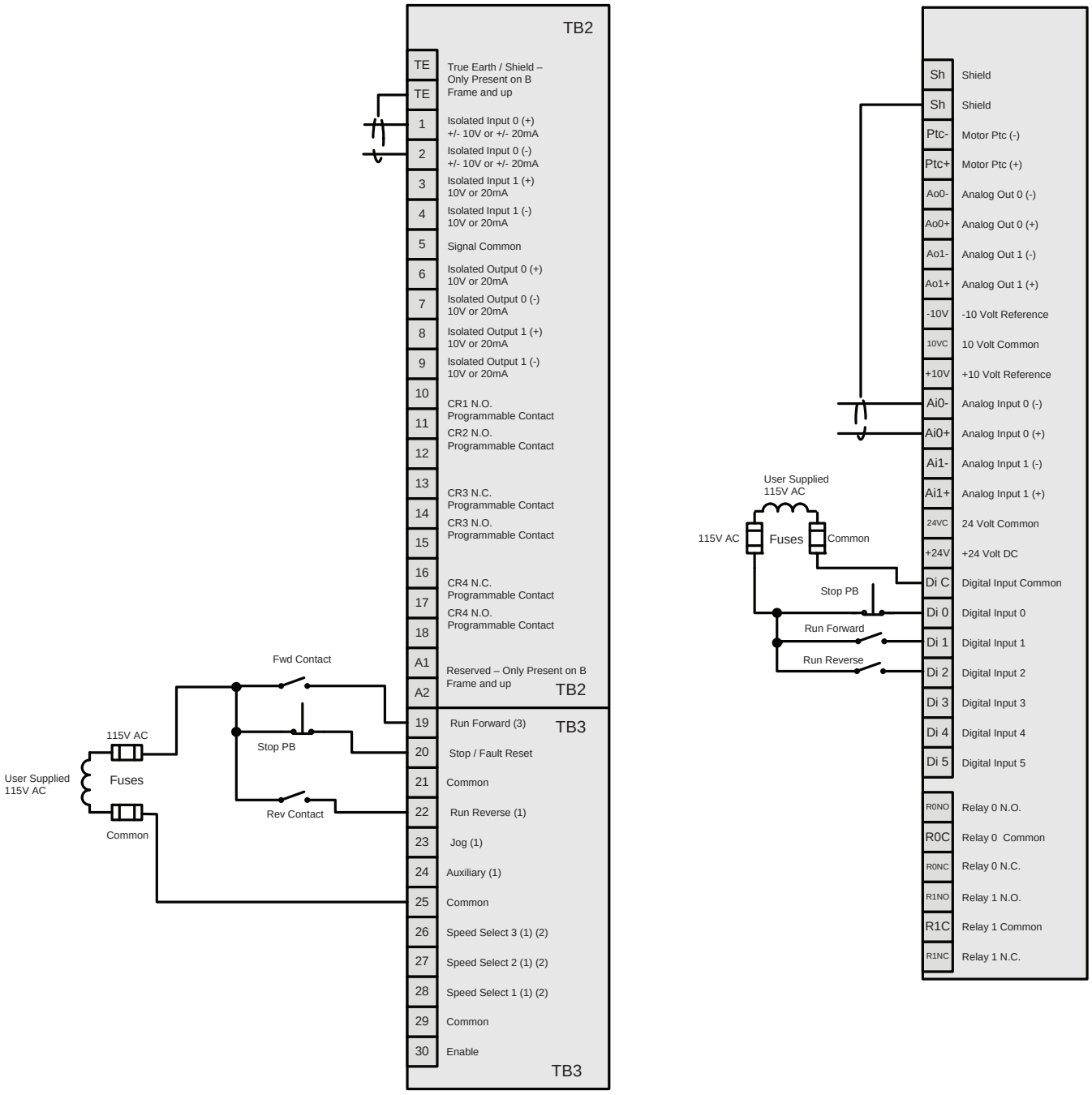
Two-wire Control with Analog Input Speed Reference

The two-wire control method is **run fwd/run rev**. The digital control inputs use an external 24V DC supply, and the analog input speed comes from a 0...10V or 4...20 mA external reference. See Figure 65 on page 159.

Figure 65 - 2-wire Control, Analog Input Reference Wiring Example

1336 PLUS II with LA7 & LA3 Analog Option I/O
& L6 115V AC Interface Board

20-750-2262D-2R
Optional 115V AC 750-Series I/O Module



(1) Refer to the 1336 PLUS II Adjustable Frequency AC Drive with Sensorless Vector User Manual, publication 1336F-UM002, page 6-27, for Programmable Input details.
(2) See Speed Select Table 2.H in the 1336 PLUS II Adjustable Frequency AC Drive with Sensorless Vector User Manual, publication 1336F-UM002, page 2-28.
(3) Input Mode = 3 (Two-wire Control – Single-source Control).

Two-wire Control Parameter Comparison

The following minimum parameters are required to configure the PowerFlex 750-Series drive motor attributes for the two-wire with analog speed reference control method.

Table 82 - 1336 PLUS II to PowerFlex 750-Series Drive (using optional I/O module)

IMPORTANT Shaded table cells indicate factory default settings. Verify these settings if the drive is not new, or if you have never set the parameters to the drive defaults.

1336 PLUS II Drive Parameters			PowerFlex 750-Series Drive Parameters (1)		
No.	**Name**	**Value**	**No.**	**Name**	**Value**
18/20/190	Base Volts/Maximum Volts/Motor NP Volts	460	25	Motor NP Volts	460
191	Motor NP Amps (v4.01)	1.6	26	Motor NP Amps	1.6
17/178	Base Frequency/Motor NP Hertz	60	27	Motor NP Hertz	60
177	Motor NP rpm	1785	28	Motor NP rpm	1785
			30	Motor NP Power	1
			29	Mtr NP Pwr Units	0-Hp
9	Control Select	1 - (Sens Vector)	31	Motor Ctrl Mode	1-Induction SV
			300	Speed Units	0-Hz
16	Minimum Frequency	0.0	522 (2)	Min Fwd Speed	0.0
			523 (2)	Min Rev Speed	0.0
19/151	Maximum Frequency/Maximum Speed	60	520 (2)	Max Fwd Speed	Motor NP Hz/rpm x 1
			521 (2)	Max Rev Speed	Motor NP Hz/rpm x -1
5	Freq Select 1	1 - (Anlg In 0)	545	Spd Ref A Sel	Port 4 (P50)
			547	Spd Ref A AnlgHi	Max Fwd Spd (P520)
			548	Spd Ref A AnlgLo	0.0
7	Accel Time 1	10.0	535	Accel Time 1	10.0
8	Decel Time 1	10.0	537	Decel Time 1	10.0
238	Anlg In0 Hi	100%	51	Anlg In0 Hi (I/O Module)	10.0
237	Anlg In0 Lo	0%	52	Anlg In0 Low (I/O Module)	0.0
241	Input Mode	3 - (2-wire)	158	DI Stop	Port 4 (P1) Input 0
242	TB3 Term 22 Sel	24 - (Run Reverse)	164	DI Run Forward (2)	Port 4 (P1) Input 1
243	TB3 Term 23 Sel	1 - (Jog)	165	DI Run Reverse (2)	Port 4 (P1) Input 2
244	TB3 Term 24Sel	12 - (Auxiliary)			
245	TB3 Term 26 Sel	4 - (Speed Sel 3)			
246	TB3 Term 27 Sel	3 - (Speed Sel 2)			
247	TB3 Term 28 Sel	2 - (Speed Sel 1)			

(1) The optional I/O module is installed in slot 4.

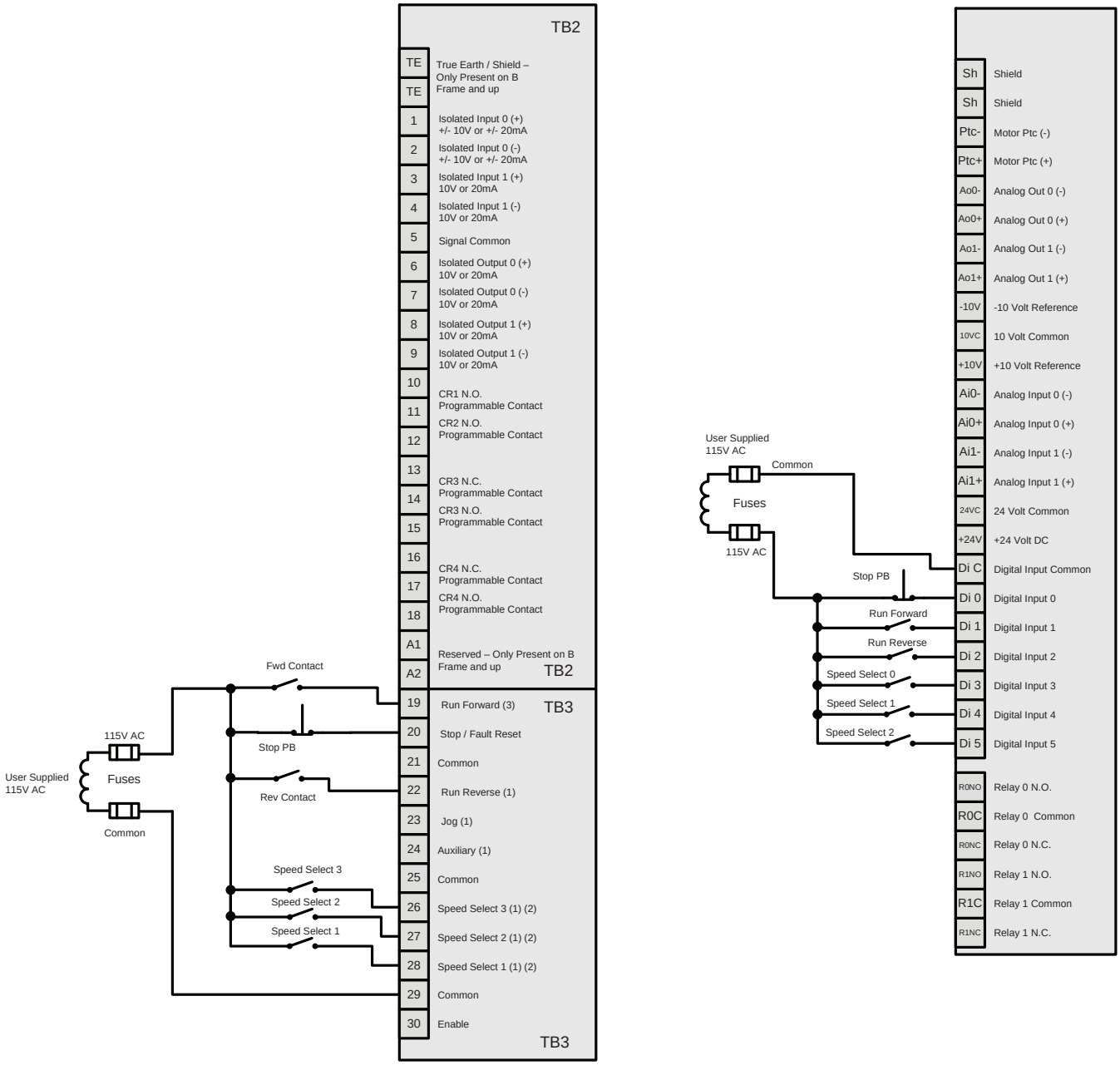
(2) The PowerFlex 750-Series drive offers parameters for speed direction (forward and reverse) that are not available in the 1336 PLUS drives.

P in all parentheses is an abbreviation for parameter.

Two-wire Control with Preset Speeds

The two-wire control method is **run fwd/run rev** with preset preference. The digital control inputs use an external 24V DC supply, and the speed reference is determined by the three speed-select digital inputs. See Figure 66 on page 162.

Figure 66 - 2-wire Control, Preset Speeds Wiring Example



(1) Refer to the 1336 PLUS II Adjustable Frequency AC Drive with Sensorless Vector User Manual, publication 1336F-UM002, page 6-27, for Programmable Input details.
(2) See Speed Select Table 2.H in the 1336 PLUS II Adjustable Frequency AC Drive with Sensorless Vector User Manual, publication 1336F-UM002, page 2-28.
(3) Input Mode = 3 (Two-wire Control – Single-source Control).

Two-wire Control Parameter Comparison

The following minimum parameters are required to configure the PowerFlex 750-Series drive motor attributes for the two-wire with analog speed reference control method. See Table 83 on page 163.

Table 83 - 1336 PLUS II to PowerFlex 750-Series Drive (using optional I/O module)

IMPORTANT Shaded table cells indicate factory default settings. Verify these settings if the drive is not new, or if you have never set the parameters to the drive defaults.

1336 PLUS II Drive Parameters			PowerFlex 750-Series Drive Parameters (1)		
No.	**Name**	**Value**	**No.**	**Name**	**Value**
18/20/190	Base Volts/Maximum Volts/Motor NP Volts (v4.01)	460	25	Motor NP Volts	460
191	Motor NP Amps (v4.01)	1.6	26	Motor NP Amps	1.6
17/178	Base Frequency/Motor NP Hertz	60	27	Motor NP Hertz	60
177	Motor NP rpm	1785	28	Motor NP rpm	1785
			30	Motor NP Power	1
			29	Mtr NP Pwr Units	0-Hp
9	Control Select 1	1 - (Sens Vector)	35	Motor Ctrl Mode	1-Induction SV
			300	Speed Units	0-Hz
16	Minimum Frequency	0.0	522 (2)	Min Fwd Speed	0.0
			523 (2)	Min Rev Speed	0.0
19/151	Maximum Frequency/Maximum Speed	60	520 (2)	Max Fwd Speed	Motor NP Hz/rpm x 1
			521 (2)	Max Rev Speed	Motor NP Hz/rpm x -1
5	Frequency Select 1	1 - (Anlg In 0)	545	Spd Ref A Sel	Port 0 Ref
			550	Spd Ref B Sel	Speed Ref B Stpt
			547	Spd Ref A AnlgHi	Max Fwd Spd (P520)
			548	Spd Ref A AnlgLo	0.0
27	Preset Frequency 1	1/12 x P19	571	Preset Speed 1	1/12 x (P27 or P28)
28	Preset Frequency 2	1/6 x P19	572	Preset Speed 2	1/6 x (P27 or P28)
29	Preset Frequency 3	1/3 x P19	573	Preset Speed 3	1/3 x (P27 or P28)
73	Preset Frequency 4	1/2 x P19	574	Preset Speed 4	1/2 x (P27 or P28)
74	Preset Frequency 5	2/3 x P19	575	Preset Speed 5	2/3 x (P27 or P28)
75	Preset Frequency 6	5/6 x P19	576	Preset Speed 6	5/6 x (P27 or P28)
76	Preset Frequency 7	1.0 x P19	577	Preset Speed 7	(P27 or P28)
7	Accel Time 1	10.0	535	Accel Time 1	10.0
8	Decel Time 1	10.0	537	Decel Time 1	10.0
241	Input Mode	3 - (2-wire)	261	Anlg In0 Hi	10.0
242	TB3 Term 22 Sel	24 - (Run Reverse)	262	Anlg In0 Lo	0.0
243	TB3 Term 23 Sel	1 - (Jog)	158	DI Stop	Port 4 (P1) Input 0
244	TB3 Term 24Sel	12 - (Auxiliary)	164	DI Run Forward	Port 4 (P1) Input 1

1336 PLUS II Drive Parameters				PowerFlex 750-Series Drive Parameters (1)		
No.	**Name**	**Value**		**No.**	**Name**	**Value**
245	TB3 Term 26 Sel	4 - (Speed Sel 3)		165	DI Run Reverse	Port 4 (P1) Input 2
246	TB3 Term 27 Sel	3 - (Speed Sel 2)		173	DI Speed Sel 0	Port 4 (P1) Input 3
247	TB3 Term 28 Sel	2 - (Speed Sel 1)		174	DI Speed Sel 1	Port 4 (P1) Input 4
				175	DI Speed Sel 2	Port 4 (P1) Input 5

(1) The optional I/O module is installed in slot 4.

(2) The PowerFlex 750-Series drive offers parameters for speed direction (forward and reverse) that are not available in the 1336 PLUS II drives.

P in all parentheses is an abbreviation for parameter.

Preset Speeds

The following tables depict the binary pattern for the drive speed-select digital inputs.

Table 84 - PowerFlex 755 Drive Digital Input (DI) Preset Speeds

1336 PLUS II Drive Preset Speeds				PowerFlex 755 Drive Preset Speeds			
Speed Select 3	Speed Select 2	Speed Select 1	Frequency Source	DI Speed Sel 2	DI Speed Sel 1	DI Speed Sel 0	Auto Reference Source
Open	Open	Open	[Freq Select 1]	0	0	0	Reference A
Open	Open	Closed	[Freq Select 2]	0	0	1	Reference A
Accessed through [Freq Select 2] parameter			[Preset Freq 1]				
Open	Closed	Open	[Preset Freq 2]	0	1	0	Reference B
Open	Closed	Closed	[Preset Freq 3]	0	1	1	Preset Speed 3
Closed	Open	Open	[Preset Freq 4]	1	0	0	Preset Speed 4
Closed	Open	Closed	[Preset Freq 5]	1	0	1	Preset Speed 5
Closed	Closed	Open	[Preset Freq 6]	1	1	0	Preset Speed 6
Closed	Closed	Closed	[Preset Freq 7]	1	1	1	Preset Speed 7

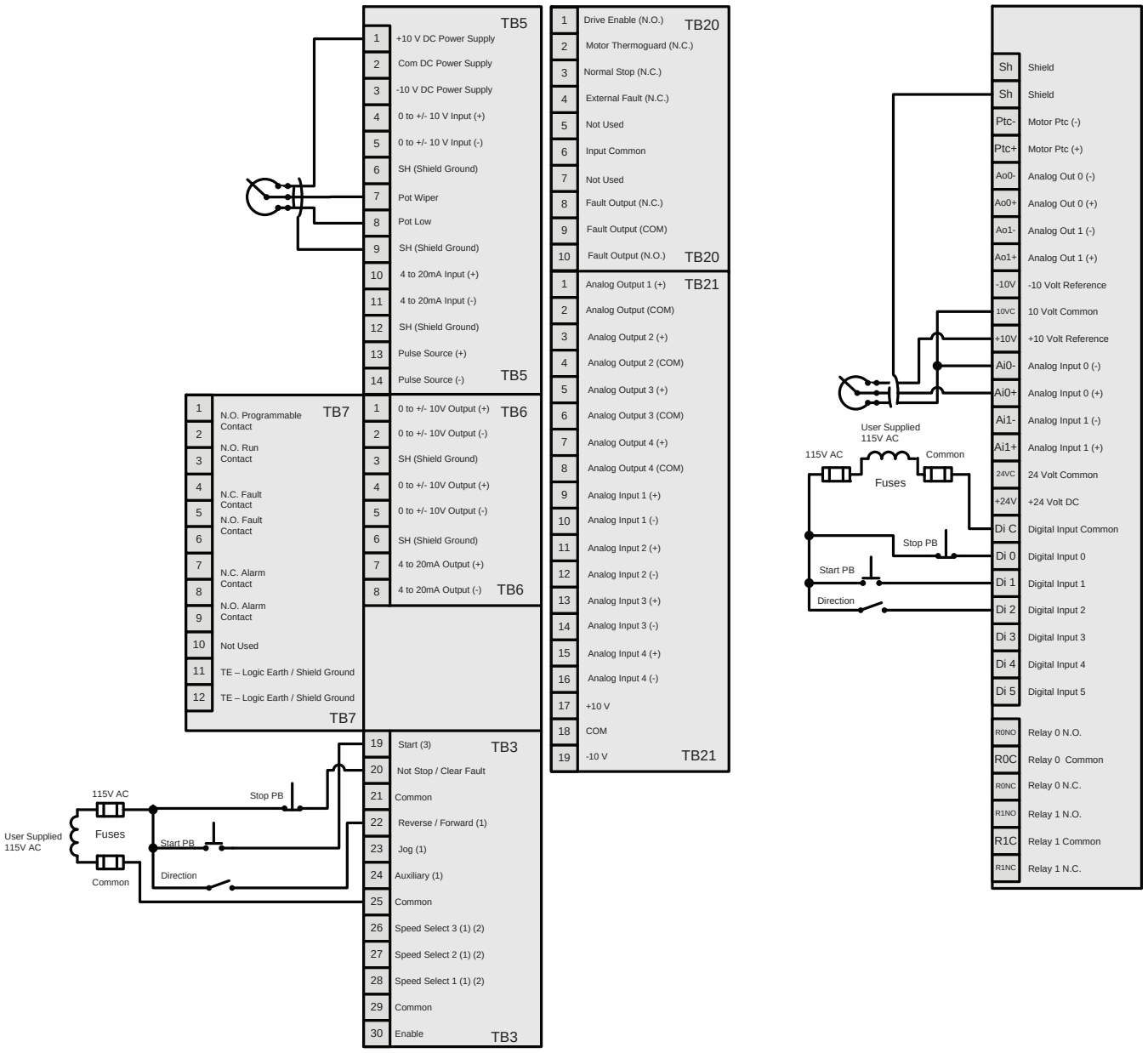
IMPORTANT Speed-select input functionality changed with the PowerFlex 755 drive, which impacts how a 1336 PLUS II drive is migrated.

1336 FORCE Drive to PowerFlex 750-Series Drive Comparison

Three-wire Control with Pot Speed Reference

The three-wire control method is **start/stop/direction**. The digital control inputs use an external 24V DC supply, and the analog speed follower reference uses a 10 kΩ potentiometer wired to the drive's internal 10V DC power supply. See Figure 67 on page 165.

Figure 67 - 3-wire Control, Pot Speed Reference Wiring Example



(1) Refer to the 1336 FORCE Adjustable Frequency AC Drive (Series B), publication 1336T-UM006, page 2-38, for Programmable Input details.
(2) See Speed Select Table 2.E in the 1336 FORCE Adjustable Frequency AC Drive (Series B), publication 1336T-UM006, page 2-36.
(3) Input Mode = 2 (Three-wire Control – Single-source Reversing).

Three-wire Control Parameter Comparison

The following minimum parameters are required to configure the PowerFlex 750-Series drive motor attributes for the three-wire with analog speed reference control method.

Table 85 - 1336 FORCE to PowerFlex 750-Series Drive (using optional I/O module)

IMPORTANT Shaded table cells indicate factory default settings. Verify these settings if the drive is not new, or if you have never set the parameters to the drive defaults.

1336 FORCE Drive Parameters				PowerFlex 750-Series Drive Parameters (1)		
No.	**Name**	**Value**		**No.**	**Name**	**Value**
231	Base Motor Volts	460		25	Motor NP Volts	460
230	Base Motor Curr	1.6		26	Motor NP Amps	1.6
231	Base Motor Freq	60		27	Motor NP Hertz	60
229	Base Motor Speed	1785		28	Motor NP rpm	1785
228	Base Motor Hp	1		30	Motor NP Power	1
				29	Mtr NP Pwr Units	0-Hp
				35	Motor Ctrl Mode	1-Induction SV
				300	Speed Units	0-Hz
				522 (2)	Min Fwd Speed	0.0
				523 (2)	Min Rev Speed	0.0
128	Fwd Speed Limit	Base Motor Speed x 1		520 (2)	Max Fwd Speed	Motor NP Hz/rpm x 1
127	Rev Speed Limit	Base Motor Speed x -1		521 (2)	Max Rev Speed	Motor NP Hz/rpm x -1
				545	Spd Ref A Sel	Port 4 (P50)
				547	Spd Ref A AnlgHi	Max Fwd Spd (P520)
				548	Spd Ref A AnlgLo	0.0
389	Accel Rate 1	10.0		535	Accel Time 1	10.0
391	Decel Rate 1	10.0		537	Decel Time 1	10.0
				51	Anlg In0 Hi (I/O Module)	10.0
233	Motor Poles	4		52	Anlg In0 Low (I/O Module)	0.0
359	Pot Offset	0		158	DI Stop (1)	Port 4 (P1) Input 0
360	Pot Scale	2		161	DI Start (1)	Port 4 (P1) Input 1
385	Input Mode	2 - (Jog, Speed Select 3)		162	DI Fwd Reverse (1)	Port 4 (P1) Input 2

(1) The optional I/O module is installed in slot 4.

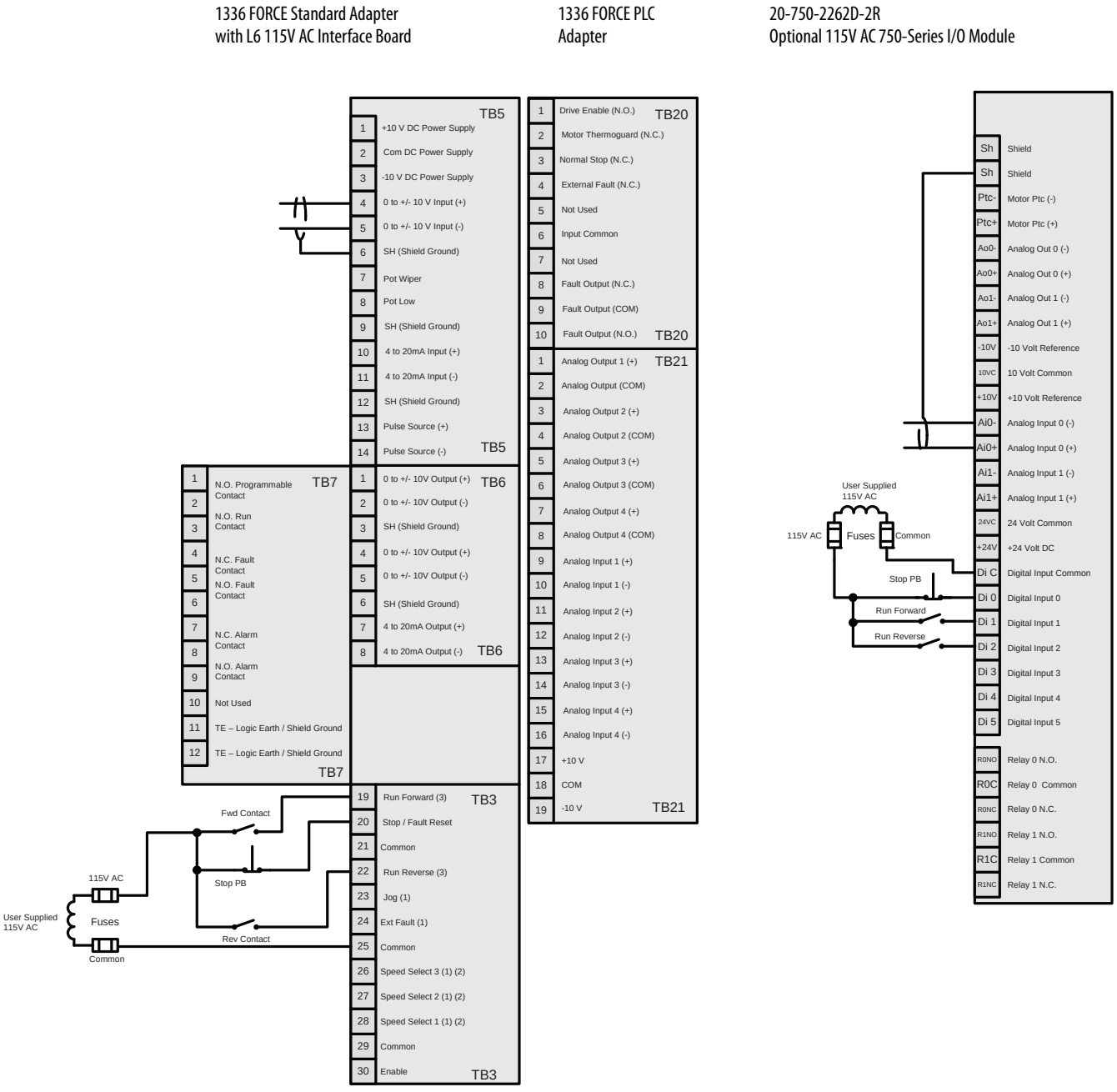
(2) The PowerFlex 750-Series drive offers parameters for speed direction (forward and reverse) that are not available in the 1336 FORCE drives.

P in all parentheses is an abbreviation for parameter.

Two-wire Control with Analog Input Speed Reference

The two-wire control method is **run fwd/run rev**. The digital control inputs use an external 24V DC supply, and the analog input speed comes from a 0...10V or 4...20 mA external reference. See Figure 68 on page 167.

Figure 68 - 2-wire Control, Analog Input Reference Wiring Example



(1) Refer to the 1336 FORCE Adjustable Frequency AC Drive (Series B), publication 1336T-UM006, page 2-37, for Programmable Input details.
(2) See Speed Select Table 2.E in the 1336 FORCE Adjustable Frequency AC Drive (Series B), publication 1336T-UM006, page 2-36.
(3) Input Mode = 26 (Two-wire Control – Single-source Control).

Two-wire Control Parameter Comparison

The following minimum parameters are required to configure the PowerFlex 750-Series drive motor attributes for the two-wire with analog speed reference control method.

Table 86 - 1336 FORCE to PowerFlex 750-Series Drive (using optional I/O module)

IMPORTANT Shaded table cells indicate factory default settings. Verify these settings if the drive is not new, or if you have never set the parameters to the drive defaults.

1336 FORCE Drive Parameters			PowerFlex 750-Series Drive Parameters (1)		
No.	**Name**	**Value**	**No.**	**Name**	**Value**
231	Base Motor Volts	460	25	Motor NP Volts	460
230	Base Motor Curr	1.6	26	Motor NP Amps	1.6
231	Base Motor Freq	60	27	Motor NP Hertz	60
229	Base Motor Speed	1785	28	Motor NP rpm	1785
228	Base Motor Hp	1	30	Motor NP Power	1
			29	Mtr NP Pwr Units	0-Hp
			31	Motor Ctrl Mode	1-Induction SV
			300	Speed Units	0-Hz
			522 (2)	Min Fwd Speed	0.0
			523 (2)	Min Rev Speed	0.0
128	Fwd Speed Limit	Base Motor Speed x 1	520 (2)	Max Fwd Speed	Motor NP Hz/rpm x 1
127	Rev Speed Limit	Base Motor Speed x -1	521 (2)	Max Rev Speed	Motor NP Hz/rpm x -1
			545	Spd Ref A Sel	Port 4 (P50)
			547	Spd Ref A AnIgHi	Max Fwd Spd (P520)
			548	Spd Ref A AnIgLo	0.0
389	Accel Rate 1	10.0	535	Accel Time 1	10.0
391	Decel Rate 1	10.0	537	Decel Time 1	10.0
233	Motor Poles	4	51	AnIg In0 Hi (I/O Module)	10.0
359	10 Volt Offset	0	52	AnIg In0 Low (I/O Module)	0.0
			158	DI Stop	Port 4 (P1) Input 0
360	10 Volt Scale	2	164	DI Run Forward (2)	Port 4 (P1) Input 1
385	Input Mode	2 - (Jog, Speed Select 3)	165	DI Run Reverse (2)	Port 4 (P1) Input 2

(1) The optional I/O module is installed in slot 4.

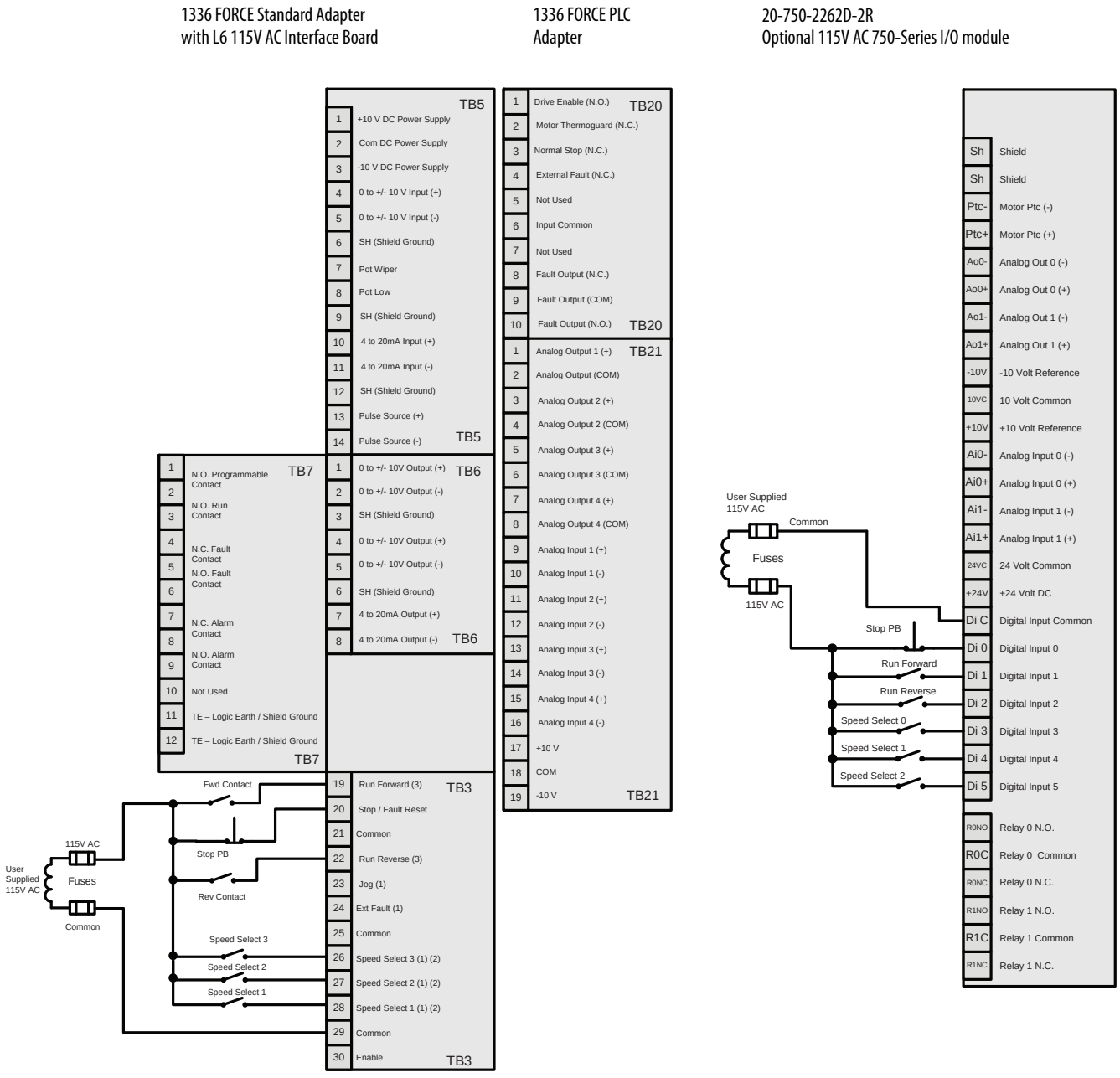
(2) The PowerFlex 750-Series drive offers parameters for speed direction (forward and reverse) that are not available in the 1336 FORCE drives.

P in all parentheses is an abbreviation for parameter.

Two-wire Control with Preset Speeds

The two-wire control method is **run fwd/run rev** with preset preference. The digital control inputs use an external 24V DC supply, and the speed reference is determined by the three speed-select digital inputs. See Figure 69 on page 169.

Figure 69 - 2-wire Control, Preset Speeds Wiring Example



(1) Refer to the 1336 FORCE Adjustable Frequency AC Drive (Series B), publication 1336T-UM006, page 2-37, for Programmable Input details.
(2) See Speed Select Table 2.E in the 1336 FORCE Adjustable Frequency AC Drive (Series B), publication 1336T-UM006, page 2-36.
(3) Input Mode = 26 (Two-wire Control – Single-source Control).

Two-wire Control Parameter Comparison

The following minimum parameters are required to configure the PowerFlex 750-Series drive motor attributes for the two-wire with analog speed reference control method.

Table 87 - 1336 FORCE to PowerFlex 750-Series Drive (using optional I/O module)

IMPORTANT Shaded table cells indicate factory default settings. Verify these settings if the drive is not new, or if you have never set the parameters to the drive defaults.

1336 FORCE Drive Parameters		
No.	**Name**	**Value**
231	Base Motor Volts	460
230	Base Motor Curr	1.6
231	Base Motor Freq	60
229	Base Motor Speed	1785
228	Base Motor Hp	1
128	Fwd Speed Limit	Base Motor Speed x 1
127	Rev Speed Limit	Base Motor Speed x -1
119	Preset Speed 1	1/6 x Base Motor Speed
120	Preset Speed 2	1/3 x Base Motor Speed
121	Preset Speed 3	1/2 x Base Motor Speed
122	Preset Speed 4	2/3 x Base Motor Speed
123	Preset Speed 5	1.0 x Base Motor Speed
389	Accel Rate 1	10.0
391	Decel Rate 1	10.0

PowerFlex 750-Series Drive Parameters [1]		
No.	**Name**	**Value**
25	Motor NP Volts	460
26	Motor NP Amps	1.6
27	Motor NP Hertz	60
28	Motor NP rpm	1785
30	Motor NP Power	1
29	Mtr NP Pwr Units	0-Hp
35	Motor Ctrl Mode	1-Induction SV
300	Speed Units	0-Hz
522 [2]	Min Fwd Speed	0.0
523 [2]	Min Rev Speed	0.0
520 [2]	Max Fwd Speed	Motor NP Hz/rpm x 1
521 [2]	Max Rev Speed	Motor NP Hz/rpm x -1
545	Spd Ref A Sel	Port 0 Ref
550	Spd Ref B Sel	Speed Ref B Stpt
547	Spd Ref A AnlgHi	Max Fwd Spd (P520)
548	Spd Ref A AnlgLo	0.0
571	Preset Speed 1	1/12 x (P27 or P28)
572	Preset Speed 2	1/6 x (P27 or P28)
573	Preset Speed 3	1/3 x (P27 or P28)
574	Preset Speed 4	1/2 x (P27 or P28)
575	Preset Speed 5	2/3 x (P27 or P28)
576	Preset Speed 6	5/6 x (P27 or P28)
577	Preset Speed 7	(P27 or P28)
535	Accel Time 1	10.0
537	Decel Time 1	10.0
261	Anlg In0 Hi	10.0
262	Anlg In0 Lo	0.0
158	DI Stop	Port 4 (P1) Input 0
164	DI Run Forward	Port 4 (P1) Input 1
165	DI Run Reverse	Port 4 (P1) Input 2

1336 FORCE Drive Parameters				PowerFlex 750-Series Drive Parameters (1)		
No.	**Name**	**Value**		**No.**	**Name**	**Value**
				173	DI Speed Sel 0	Port 4 (P1) Input 3
233	Motor Poles	4		174	DI Speed Sel 1	Port 4 (P1) Input 4
385	Input Mode	26 - (Jog, Speed Select 3)		175	DI Speed Sel 2	Port 4 (P1) Input 5

(1) The optional I/O module is installed in slot 4.
(2) The PowerFlex 750-Series drive offers parameters for speed direction (forward and reverse) that are not available in the 1336 FORCE drives.

P in all parentheses is an abbreviation for parameter.

Preset Speeds

The following tables depict the binary pattern for the drive speed-select digital inputs.

Table 88 - PowerFlex 755 Drive Digital Input (DI) Preset Speeds

PowerFlex 755 Drive Preset Speeds			
DI Speed Sel 2	DI Speed Sel 1	DI Speed Sel 0	Auto Reference Source
0	0	0	Reference A
0	0	1	Reference A
0	1	0	Reference B
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

IMPORTANT Speed-select input functionality changed with the PowerFlex 755 drive, which impacts how a 1336 FORCE drive is migrated.

Table 89 - 1336 FORCE Speed Select Input State vs. Frequency Source

	Speed Select 3	**Speed Select 2**	**Speed Select 1**	**Velocity Reference Source**
TB3	**Terminal 26**	**Terminal 27**	**Terminal 28**	**Interface Option (MOD L4, L5, L6)**
	0 (1)	0	0	Ext Ref 1 Para 101 (2)
	0	0	X	Preset Speed Ref 1 (P 119)
	0	X	0	Preset Speed Ref 2, (P 120)
	0	X	X	Preset Speed Ref 3, (P 121)
	X	0	0	Preset Speed Ref 4, (P 122)
	X	0	X	Preset Speed Ref 5, (P 123)
	X	X	0	External Reference 2 (P 104)
	X	X	X	Last State

Equivalent truth table implemented in Parameter 52 Logic Command Word.

Para 52	**Bit 14**	**Bit 13**	**Bit 12**	**Velocity Reference Source Bits**

	Speed Select 3	Speed Select 2	Speed Select 1	Velocity Reference Source
TB3	Terminal 26	Terminal 27	Terminal 28	Interface Option (MOD L4, L5, L6)
	0	0	X	Ext Ref 1 (P 101)
	0	X	0	Preset Speed Ref 1 (P 119)
	0	X	X	Preset Speed Ref 2 (P 120)
	X	0	0	Preset Speed Ref 3 (P 121)
	X	0	X	Preset Speed Ref 4 (P 122)
	X	X	0	Preset Speed Ref 5 (P 123)
	X	X	X	External Reference 2 (P 104)
	0	0	0	No Reference or Last State

(1) 0 = Open – input removed, X = Closed – input present

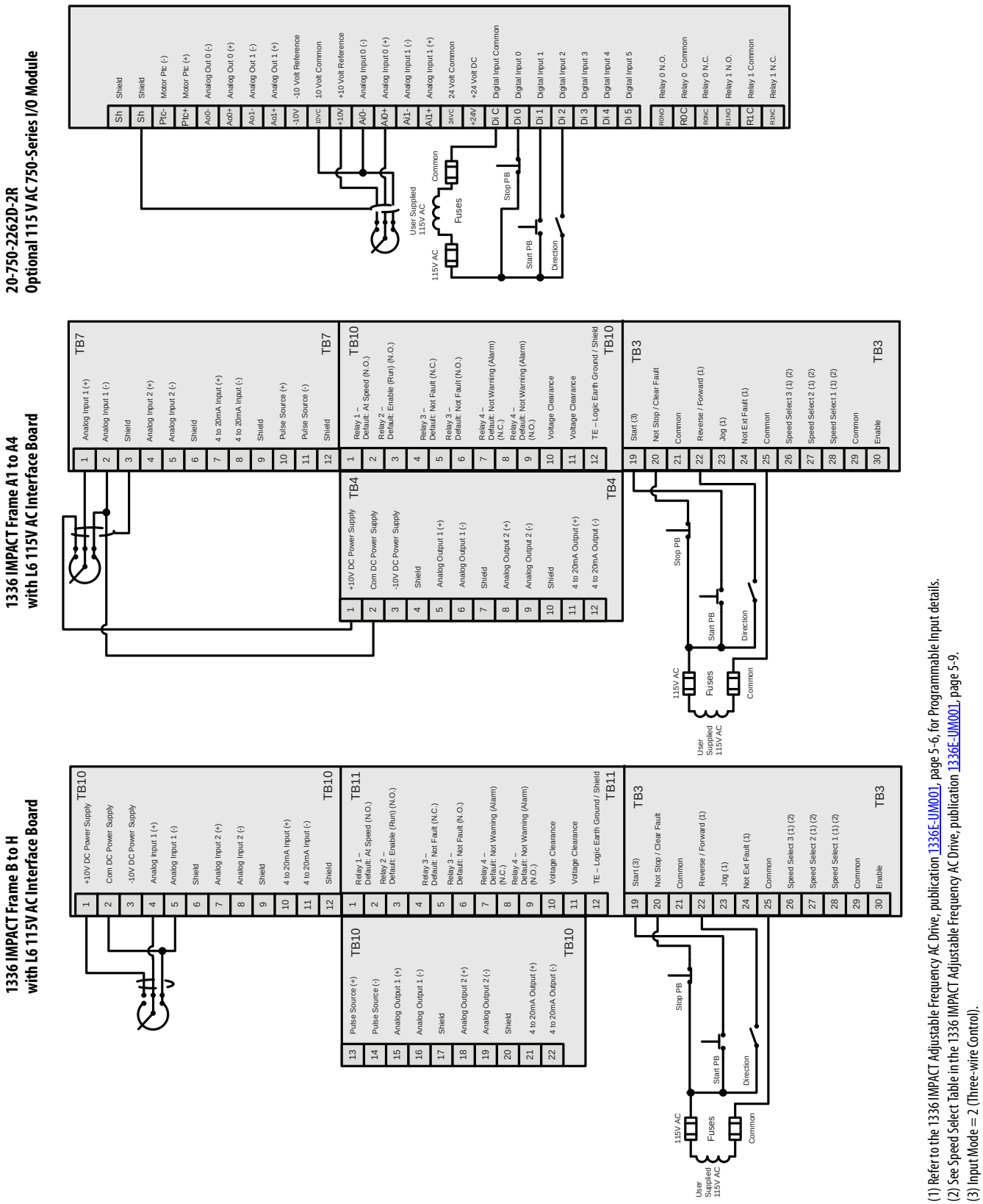
(2) Unless otherwise configured, this will default to the HIM speed reference input.

1336 IMPACT Drive to PowerFlex 750-Series Drive Comparison

Three-wire Control with Pot Speed Reference

The three-wire control method is **start/stop/direction**. The digital control inputs use an external 24V DC supply, and the analog speed follower reference uses a 10 kΩ potentiometer wired to the drive's internal 10V DC power supply. See Figure 70 on page 173.

Figure 70 - 3-wire Control, Pot Speed Reference Wiring Example



(1) Refer to the 1336 IMPACT Adjustable Frequency AC Drive, publication 1336E-UM001, page 5-6, for Programmable Input details.
(2) See Speed Select Table in the 1336 IMPACT Adjustable Frequency AC Drive, publication 1336E-UM001, page 5-9.
(3) Input Mode = 2 (Three-wire Control).

Three-wire Control Parameter Comparison

The following minimum parameters are required to configure the PowerFlex 750-Series drive motor attributes for the three-wire with analog speed reference control method.

Table 90 - 1336 IMPACT to PowerFlex 750-Series Drive (using optional I/O module)

IMPORTANT Shaded table cells indicate factory default settings. Verify these settings if the drive is not new, or if you have never set the parameters to the drive defaults.

1336 IMPACT Drive Parameters				PowerFlex 750-Series Drive Parameters (1)		
No.	**Name**	**Value**		**No.**	**Name**	**Value**
5	Nameplate Volts	460		25	Motor NP Volts	460
4	Nameplate Amps	1.6		26	Motor NP Amps	1.6
6	Nameplate Hz	60		27	Motor NP Hertz	60
3	Nameplate rpm	1785		28	Motor NP rpm	1785
2	Nameplate Hp	1		30	Motor NP Power	1
				29	Mtr NP Pwr Units	0-Hp
				35	Motor Ctrl Mode	1-Induction SV
				300	Speed Units	0-Hz
				522 (2)	Min Fwd Speed	0.0
				523 (2)	Min Rev Speed	0.0
41	Fwd Speed Limit	Nameplate rpm x 1		520 (2)	Max Fwd Speed	Motor NP Hz/rpm x 1
40	Rev Speed Limit	Nameplate rpm x -1		521 (2)	Max Rev Speed	Motor NP Hz/rpm x -1
				545	Spd Ref A Sel	Port 4 (P50)
				547	Spd Ref A AnlgHi	Max Fwd Spd (P520)
				548	Spd Ref A AnlgLo	0.0
42	Accel Time 1	10.0		535	Accel Time 1	10.0
44	Decel Time 1	10.0		537	Decel Time 1	10.0
				51	Anlg In0 Hi (I/O Module)	10.0
7	Motor Poles	4		52	Anlg In0 Low (I/O Module)	0.0
97	An In 1 Offset	0		158	DI Stop (1)	Port 4 (P1) Input 0
98	An In 1 Scale	2		161	DI Start (1)	Port 4 (P1) Input 1
116	L Option Mode	26 - (Jog, Speed Select 3)		162	DI Fwd Reverse (1)	Port 4 (P1) Input 2

(1) The optional I/O module is installed in slot 4.

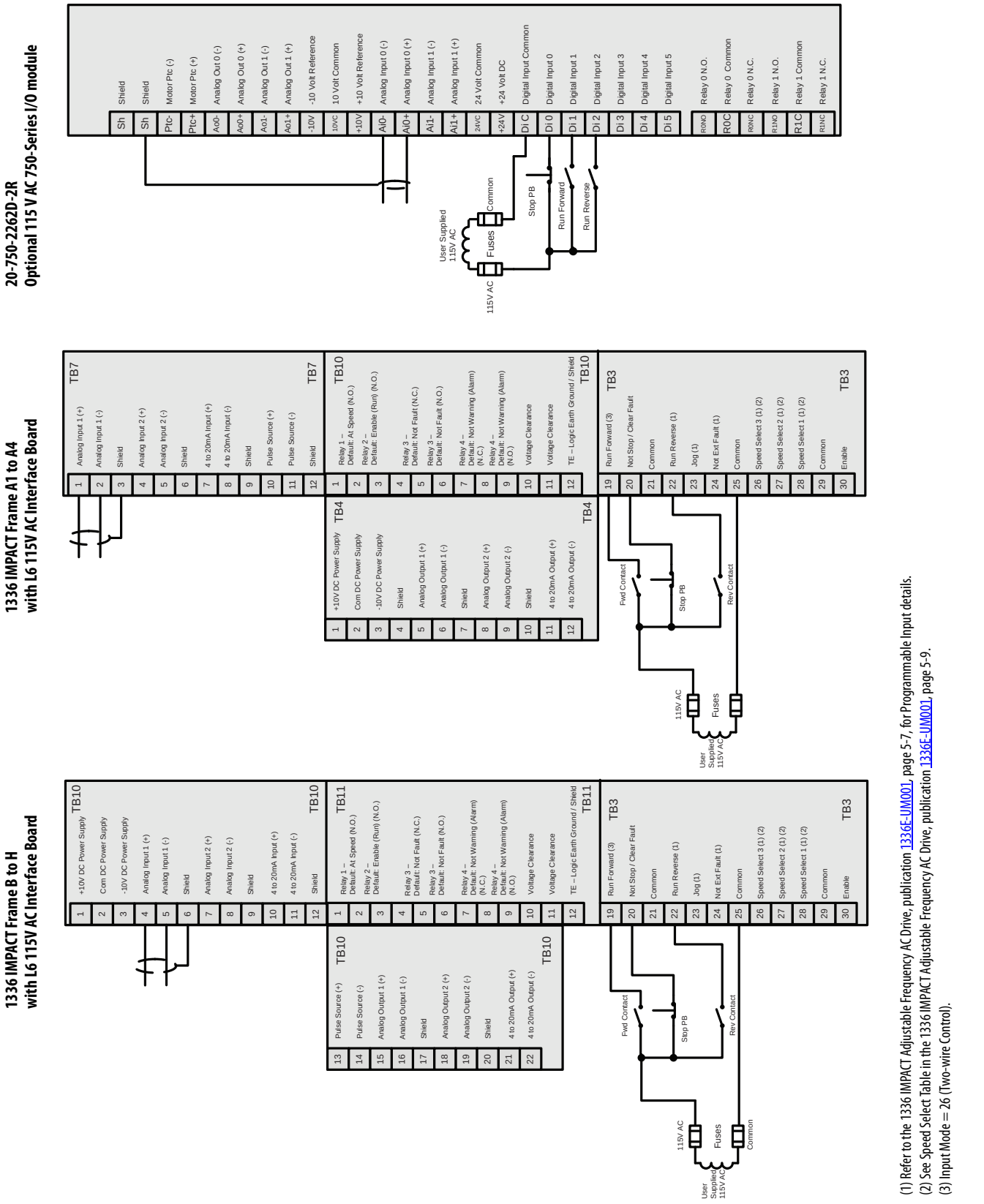
(2) The PowerFlex 750-Series drive offers parameters for speed direction (forward and reverse) that are not available in the 1336 IMPACT drives.

P in all parentheses is an abbreviation for parameter.

Two-wire Control with Analog Input Speed Reference

The two-wire control method is **run fwd/run rev**. The digital control inputs use an external 24V DC supply, and the analog input speed comes from a 0...10V or 4...20 mA external reference. See Figure 71 on page 176.

Figure 71 - 2-wire Control, Analog Input Reference Wiring Example



(1) Refer to the 1336 IMPACT Adjustable Frequency AC Drive, publication 1336E-UM001, page 5-7, for Programmable Input details.
(2) See Speed Select Table in the 1336 IMPACT Adjustable Frequency AC Drive, publication 1336E-UM001, page 5-9.
(3) Input Mode = 26 (Two-wire Control).

Two-wire Control Parameter Comparison

The following minimum parameters are required to configure the PowerFlex 750-Series drive motor attributes for the two-wire with analog speed reference control method.

Table 91 - 1336 IMPACT to PowerFlex 750-Series Drive (using optional I/O module)

IMPORTANT Shaded table cells indicate factory default settings. Verify these settings if the drive is not new, or if you have never set the parameters to the drive defaults.

1336 IMPACT Drive Parameters		
No.	**Name**	**Value**
5	Nameplate Volts	460
4	Nameplate Amps	1.6
6	Nameplate Hz	60
3	Nameplate rpm	1785
2	Nameplate Hp	1
41	Fwd Speed Limit	Nameplate rpm x 1
40	Rev Speed Limit	Nameplate rpm x -1
42	Accel Time 1	10.0
44	Decel Time 1	10.0
7	Motor Poles	4
97	An In 1 Offset	0
98	An In 1 Scale	2
116	L Option Mode	26 - (Jog, Speed Select 3)

PowerFlex 750-Series Drive Parameters (1)		
No.	**Name**	**Value**
25	Motor NP Volts	460
26	Motor NP Amps	1.6
27	Motor NP Hertz	60
28	Motor NP rpm	1785
30	Motor NP Power	1
29	Mtr NP Pwr Units	0-Hp
31	Motor Ctrl Mode	1-Induction SV
300	Speed Units	0-Hz
522 (2)	Min Fwd Speed	0.0
523 (2)	Min Rev Speed	0.0
520 (2)	Max Fwd Speed	Motor NP Hz/rpm x 1
521 (2)	Max Rev Speed	Motor NP Hz/rpm x -1
545	Spd Ref A Sel	Port 4 (P50)
547	Spd Ref A AnlgHi	Max Fwd Spd (P520)
548	Spd Ref A AnlgLo	0.0
535	Accel Time 1	10.0
537	Decel Time 1	10.0
51	Anlg In0 Hi (I/O Module)	10.0
52	Anlg In0 Low (I/O Module)	0.0
158	DI Stop	Port 4 (P1) Input 0
164	DI Run Forward (2)	Port 4 (P1) Input 1
165	DI Run Reverse (2)	Port 4 (P1) Input 2

(1) The optional I/O module is installed in slot 4.

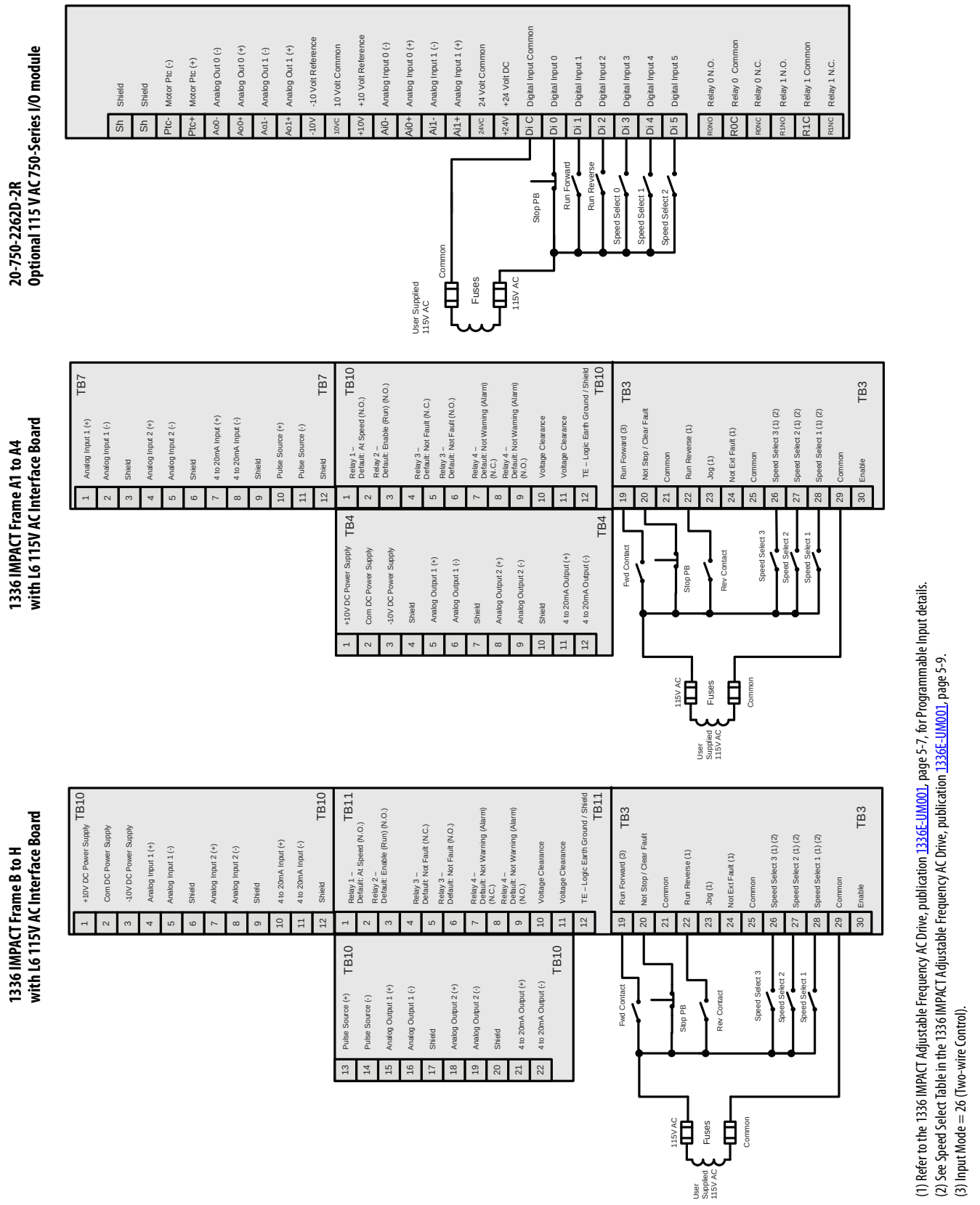
(2) The PowerFlex 750-Series drive offers parameters for speed direction (forward and reverse) that are not available in the IMPACT drives.

P in all parentheses is an abbreviation for parameter.

Two-wire Control with Preset Speeds

The two-wire control method is **run fwd/run rev** with preset preference. The digital control inputs use an external 24V DC supply, and the speed reference is determined by the three speed-select digital inputs. See Figure 72 on page 179.

Figure 72 - 2-wire Control, Preset Speeds Wiring Example



(1) Refer to the 1336 IMPACT Adjustable Frequency AC Drive, publication 1336E-UM001, page 5-7, for Programmable Input details.
(2) See Speed Select Table in the 1336 IMPACT Adjustable Frequency AC Drive, publication 1336E-UM001, page 5-9.
(3) Input Mode = 26 (Two-wire Control).

Two-wire Control Parameter Comparison

The following minimum parameters are required to configure the PowerFlex 750-Series drive motor attributes for the two-wire with analog speed reference control method.

Table 92 - 1336 IMPACT to PowerFlex 750-Series Drive (using optional I/O module)

IMPORTANT Shaded table cells indicate factory default settings. Verify these settings if the drive is not new, or if you have never set the parameters to the drive defaults.

1336 IMPACT Drive Parameters			PowerFlex 750-Series Drive Parameters [1]		
No.	**Name**	**Value**	**No.**	**Name**	**Value**
5	Nameplate Volts	460	25	Motor NP Volts	460
4	Nameplate Amps	1.6	26	Motor NP Amps	1.6
6	Nameplate Hz	60	27	Motor NP Hertz	60
3	Nameplate rpm	1785	28	Motor NP rpm	1785
2	Nameplate Hp	1	30	Motor NP Power	1
			29	Mtr NP Pwr Units	0-Hp
			35	Motor Ctrl Mode	1-Induction SV
			300	Speed Units	0-Hz
			522 [2]	Min Fwd Speed	0.0
			523 [2]	Min Rev Speed	0.0
41	Fwd Speed Limit	Nameplate rpm x 1	520 [2]	Max Fwd Speed	Motor NP Hz/rpm x 1
40	Rev Speed Limit	Nameplate rpm x -1	521 [2]	Max Rev Speed	Motor NP Hz/rpm x -1
			545	Spd Ref A Sel	Port 0 Ref
			550	Spd Ref B Sel	Speed Ref B Stpt
			547	Spd Ref A AnlgHi	Max Fwd Spd (P520)
			548	Spd Ref A AnlgLo	0.0
29	Speed Ref 1	1/12 x Nameplate rpm	571	Preset Speed 1	1/12 x (P27 or P28)
31	Speed Ref 2	1/6 x Nameplate rpm	572	Preset Speed 2	1/6 x (P27 or P28)
32	Speed Ref 3	1/3 x Nameplate rpm	573	Preset Speed 3	1/3 x (P27 or P28)
33	Speed Ref 4	1/2 x Nameplate rpm	574	Preset Speed 4	1/2 x (P27 or P28)
34	Speed Ref 5	2/3 x Nameplate rpm	575	Preset Speed 5	2/3 x (P27 or P28)
35	Speed Ref 6	5/6 x Nameplate rpm	576	Preset Speed 6	5/6 x (P27 or P28)
36	Speed Ref 7	1.0 x Nameplate rpm	577	Preset Speed 7	(P27 or P28)
42	Accel Rate 1	10.0	535	Accel Time 1	10.0
44	Decel Rate 1	10.0	537	Decel Time 1	10.0
			261	Anlg In0 Hi	10.0
			262	Anlg In0 Lo	0.0
			158	DI Stop	Port 4 (P1) Input 0
			164	DI Run Forward	Port 4 (P1) Input 1
			165	DI Run Reverse	Port 4 (P1) Input 2

1336 IMPACT Drive Parameters				PowerFlex 750-Series Drive Parameters (1)		
No.	**Name**	**Value**		**No.**	**Name**	**Value**
				173	DI Speed Sel 0	Port 4 (P1) Input 3
7	Motor Poles	4		174	DI Speed Sel 1	Port 4 (P1) Input 4
116	L Option Mode	26 - (Jog, Speed Select 3)		175	DI Speed Sel 2	Port 4 (P1) Input 5

(1) The optional I/O module is installed in slot 4.
(2) The PowerFlex 750-Series drive offers parameters for speed direction (forward and reverse) that are not available in the 1336 IMPACT drives.

P in all parentheses is an abbreviation for parameter.

Preset Speeds

The following tables depict the binary pattern for the drive speed-select digital inputs.

Table 93 - PowerFlex 755 Drive Digital Input (DI) Preset Speeds

1336 IMPACT Drive Speed Select/Speed Reference(1)				PowerFlex 755 Drive Preset Speeds			
Speed Select 3	Speed Select 2	Speed Select 1	Frequency Source	DI Speed Sel 2	DI Speed Sel 1	DI Speed Sel 0	Auto Reference Source
Open	Open	Open	Speed Ref 1	0	0	0	Reference A
Open	Open	Closed	Speed Ref 2	0	0	1	Reference A
Open	Closed	Open	Speed Ref 3	0	1	0	Reference B
Open	Closed	Closed	Speed Ref 4	0	1	1	Preset Speed 3
Closed	Open	Open	Speed Ref 5	1	0	0	Preset Speed 4
Closed	Open	Closed	Speed Ref 6	1	0	1	Preset Speed 5
Closed	Closed	Open	Speed Ref 7	1	1	0	Preset Speed 6
Closed	Closed	Closed	Last State	1	1	1	Preset Speed 7

(1) Closed = Applied = 1; Open = Removed = 0.

IMPORTANT Speed-select input functionality changed with the PowerFlex 755 drive, which impacts how a 1336 IMPACT drive is migrated.

Notes:

Network Communications

Overview

A 1336-Series drive with a communication option card can be replaced with a PowerFlex 750-Series drive. The process to migrate can vary significantly depending upon the communication option in the 1336-Series drive, the controller type communicating to the drive, and which PowerFlex 750-Series drive model is selected.

This section shows which 20-COMM network options can be used with the PowerFlex 750-Series drives, and introduces the dedicated communications that are in the PowerFlex 750-Series drives. Because of the wide variety of networks, processors, and drive options to consider, only migration guidelines are covered instead of step-by-step procedures.

20-COMM Carrier Adapters

Most legacy communication adapters (20-COMM) can be used with the PowerFlex 755. However, the restrictions stated below do apply.

Frame 1 - It is recommended that the 20-750-20COMM-F1 Communication Carrier Card only be installed in Port 4. Port 5 will not be accessible when this module is installed.

Frames 2 and larger - It is recommended that the 20-750-20COMM Communication Carrier Card be installed in Port 6. Using Port 4 or 5 will make the adjacent left port inaccessible to other option modules and may interfere with network cable connections. For details, contact Allen-Bradley Drives Technical Support.

Adapter		Accesses Ports 0…6 for I/O Connections (Implicit and Explicit Messaging)	Accesses Ports 7 and Higher (I/O, Explicit Messaging)	Supports Drive Add-on Profiles	Supports Asian-Languages [6]
Cat. No.	Type				
20-COMM-B	BACnet MS/TP	Not Compatible			
20-COMM-C	ControlNet (Coax)	✓ v3.001 [4]	✓ v3.001 [4]	✓ [5]	✓ v3.001 [4]
20-COMM-D	DeviceNet	✓ [2]	Not Compatible		
20-COMM-E	EtherNet/IP	✓ v4.001 [4]	✓ v4.001 [4]	✓ [5]	✓ v4.001 [4]
20-COMM-H	RS-485 HVAC	✓ v2.009 [3] [4]	Not Compatible		
20-COMM-K	CANopen	✓ v1.001 [4]			
20-COMM-L	LonWorks	✓ v1.007 [4]			
20-COMM-M	Modbus/TCP	✓ v2.001 [4]	✓ v2.001 [4]	Not Compatible	✓ v2.001 [4]
20-COMM-P	ControlNet (Fiber)	✓ v1.006 [4]	✓ v1.006 [4]		Not Compatible
20-COMM-Q	PROFIBUS DP	✓ v3.001 [4]	✓ v3.001 [4]	✓ [5]	✓ v3.001 [4]
20-COMM-R [1]	Remote I/O	✓ [2]	Not Compatible		
20-COMM-S	RS-485 DF1	✓ [2]			

(1) This item has Silver Series status.

(2) Controller must be capable of reading/writing 32-bit floating point (REAL) values.

(3) Supports all three modes of operation (RTU, P1, N2).

(4) Requires this adapter firmware version or higher.

(5) Requires firmware version v1.05 or higher of the drive Add-on Profiles for Studio 5000 Logix Designer software.

(6) Chinese, Japanese, and Korean languages are supported at the time of publication.

PowerFlex 750-Series Communication Options

These communication options provide enhanced features beyond what 20-COMM adapters provide. For additional information, refer to the user manuals in the following table.

Communication Option	User Manual
Coaxial ControlNet option module	PowerFlex 20-750-CNETC Coaxial ControlNet Option Module User Manual, publication 750COM-UM003
Dual-port EtherNet/IP option module	PowerFlex 20-750-ENETR Dual-Port EtherNet/IP Option Module User Manual, publication 750COM-UM008
PROFIBUS DPV1 option module	PowerFlex 20-750-PBUS Profibus DPV1 Option Module User Manual, publication 750COM-UM004
PROFINET single port option module	PowerFlex 20-750-PNET Profinet Single Port Option Module User Manual, publication 750COM-UM006
DeviceNet option module	PowerFlex 750-Series Drive DeviceNet Option Module User Manual, publication 750COM-UM002

PowerFlex 750-Series Embedded EtherNet/IP Adapter

The 750-Series drive supports a full array of communication options and also has a standard embedded EtherNet/IP adapter. For complete information, refer to the Drive Embedded EtherNet/IP Adapter User Manual, publication 750COM-UM001.

The 1336 PLUS, PLUS II, FORCE, and IMPACT drives support a SCANPort interface, and the 1336 CLASSIC drive supports a serial communication interface. The PowerFlex 753 and 755 drives support a device peripheral interface (DPI).

PowerFlex 750-Series Software Versions

Knowing the software versions of each drive is essential to an effective migration. See Table .

Drive Software Tool	PowerFlex 755 version 1.*xx*	PowerFlex 753 version 1.*xx* PowerFlex 755 version 2.*xx*	PowerFlex 753 version 6.*xx* PowerFlex 755 version 6.*xx*
DriveExplorer software	version 6.01.00 (and later)	version 6.02.00 (and later)	version 6.04.00 (and later)
DriveTools SP/DriveExecutive software	version 5.01.00 (and later)	version 5.02.00 (and later)	version 5.05.00 (and later)
DeviceLogix 5000 add-on profiles	version 2.01.00 (and later)	version 2.02.00 (and later)	version 4.02.00 (and later)
Connected Components Workbench software	version 1.02.00 (and later)	version 1.02.00 (and later)	version 1.02.00 (and later)

Velocity Reference/Feedback

For the 1336-Series drives, the velocity reference and feedback data are referenced in 16-bits, with a maximum speed that equals 4096.

Using the 20-COMM cards with the PowerFlex 753 and 755 drives, the velocity reference and feedback data are referenced in multiples of 1000. For example, depending on the setting of P300 (speed units), a reference of 30,000 is equal to either 30 Hz or 30 rpm.

The PowerFlex 755 embedded ethernet velocity reference and feedback data are in engineering units and are dependent on P300 (speed units). A reference of 30.0 equals either 30 Hz or 30 rpm.

Using the I/O Adaptor

The terms input and output are defined from the controller's point of view.

- Output I/O is data that is produced by the controller and pushed to (consumed by) the adapter.
- Input I/O is status data that is produced by the adapter and pulled to (consumed by) the controller.

The I/O image varies greatly depending on the communications adaptor. Refer to the respective I/O adaptor user manual for details.

16 Bit-based Processors

The PowerFlex 750-Series drives are 32 bit-based, whereas the PLC5 is 16-bit. For applications that use a PLC5 with a PowerFlex 750-Series drive, conduct a review to determine which data are passed, and if the PLC5 can handle this data.

Refer to these Rockwell Automation Knowledgebase online documents for more information.

- 65712 - Using 20-COMM with PowerFlex 755 and 753 with a 16-bit controller
- 117297 - Migrating 1305/1336 Drives on DeviceNet to PowerFlex Drives, sections:
  - 1305, 1336 Plus/1336 Plus II to PowerFlex753/755 with 20-COMM-D
  - 1305, 1336 Plus/1336 Plus II to PowerFlex753/755 with 20-750-DNET

IMPORTANT To access the Rockwell Automation Knowledgebase articles, you must have a login account. If you do not already have a login account, you can easily create an account from the login page.

http://rockwellautomation.custhelp.com/app/utils/login_form

TIP You can also register for a TechConnect Support account which will allow you to access additional online features of the Rockwell Automation Knowledgebase, and to obtain phone support. Contact your local Rockwell Automation sales representative or distributor for more information about registering for a TechConnect Support account.

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