



Technical Data

PowerFlex 4 AC Drives



Bringing Together Leading Brands in Industrial Automation

PowerFlex™ 4 AC Drives Technical Data

The Newest Member of the PowerFlex Family of Drives

Providing users with powerful motor speed control in a compact, space saving design, the Allen-Bradley PowerFlex 4 AC drive is the smallest and most cost-effective member of the PowerFlex family of drives. Available in power ratings from 0.2 to 3.7 kW (0.25 to 5 HP) and in voltage classes of 120, 240 and 480 volts, the PowerFlex 4 is designed to meet global OEM and end-user demands for flexibility, space savings and ease of use and is a cost-effective alternative for speed control of applications such as machine tools, fans, pumps and conveyors and material handling systems.



Table of Contents

<u>Description</u>	<u>Page</u>
Packaging and Mounting	3
Start Up, Programming and Operation	3
Optimized Performance	3
Sensorless Vector Performance	4
PC Programming Software	4
Catalog Number Explanation	5
Product Selection	5
NEMA 1 Option Kit	6
Communication Option Kits	6
User Installed Options	7
Installation Considerations	8
Control Wiring	9
Specifications	10
Parameter Descriptions	12
Approximate Dimensions	13

Standard Drives Program

Packaging and Mounting

- Installation can be a virtual snap using the **DIN rail mounting** feature. Panel mounting is also available providing added flexibility.
- **Zero Stacking™** is allowable for ambient temperatures up to 40°C, saving valuable panel space.
- **Integral filtering** is available on select 230V single phase ratings, providing a cost-effective means of meeting EN55011, Class A and B EMC requirements. External filters provide compliance to Class A and B requirements for all PowerFlex 4 ratings.
- An optional **IP30 (NEMA 1) conduit box** is easily adapted to the standard IP20 (NEMA Type Open) product, providing increased environmental ratings.



Start Up, Programming and Operation

- The PowerFlex 4 has an **integral keypad** that provides out of the box operation using the local potentiometer and control keys.
- The 10 most common application parameters are contained in the **Basic Program Group**, making programming fast and easy.
- The **programming keys** have the same function as all other PowerFlex drives, so if you can program one PowerFlex drive, you can program them all.
- **4 digit display** with 10 additional LED indicators provides an intuitive display of drive status and information.
- The PowerFlex 4 has integral **RS-485 communications** that can be used in a multi-drop network configuration or programming from a PC.



Optimized Performance

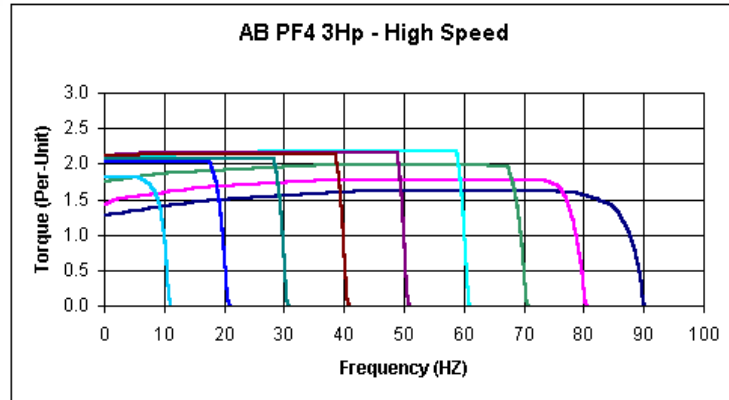
- **Removable MOV** to ground provides trouble-free operation when used on ungrounded distribution systems.
- A **relay pre-charge** limits inrush current.
- **Integral brake resistor**, available on 0.75 kW (1.0 HP) units and larger, provides dynamic braking capability with simple low cost brake resistors.
- DIP switch settable **24V DC sink or source control** for control wiring flexibility.
- 150% overload for 60 seconds or 200% overload for 3 seconds provides **robust overload protection**.
- **Adjustable PWM frequency up to 16 kHz** ensures quiet operation.



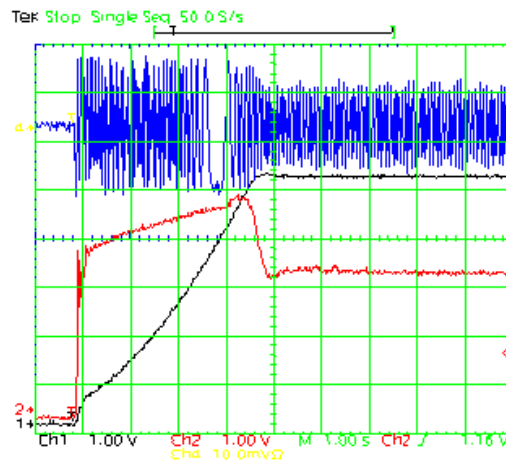
Standard Drives Program

Sensorless Vector Performance

- Drive automatically provides auto boost (IR compensation) and slip compensation.
- Provides excellent speed regulation and high levels of torque across the entire speed range of the drive, and improved speed regulation even as loading increases.



- At 100% motor load, the drive will run the motor at synchronous speed.
- Excellent current regulation.
- The PowerFlex 4 has the ability to start into at least 150% load.
- Excellent starting torque.
- Linear acceleration.
- Best in class digital input response time and repeatability.

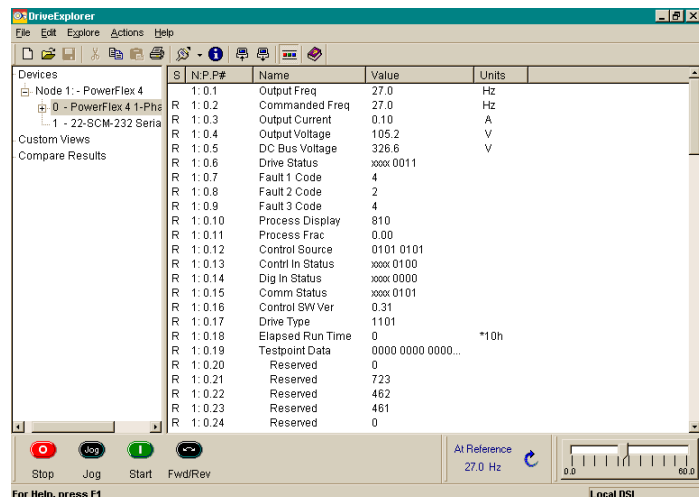


PC Programming Software

Through the use of a Serial Converter Module and DriveExplorer or Drive Executive software, programming can be greatly simplified.

DriveExplorer Software

- View and modify drive and adapter parameters in a method similar to the file management capability of Microsoft Windows Explorer.
- Operate the drive via an on-screen Control Bar, which is a tool that allows you to start, stop, and change the speed reference of the drive.
- Save, restore and print parameter information.
- Compare current parameters with factory defaults or previously saved parameter values.
- Edit, upload and download parameters.



DriveExecutive Software

- Online and offline programming capability
- In-grid and dialog-based parameter editing
- Immediate visual indication of drive and communication status when viewing online drive
- Integrated HTML Help architecture

Standard Drives Program

Catalog Number Explanation

22A	-	A	1P5	N	1	1	4
Drive	Dash	Voltage Rating	Rating	Enclosure	HIM	Emission Class	Comm Slot

Code

22A PowerFlex 4

Code

4 RS485

Version

4 RS485

Code Rating

0 No Filter
1 Integral EMI Filter

Code Voltage Ph.

V 120V AC 1
A 240V AC 1
B 240V AC 3
D 480V AC 3

Code Interface Module

1 Fixed Keypad

Code Enclosure

N Panel Mount - IP 20 (NEMA Type Open)

Output Current @ 380-480V Input

Code	Amps	kW (HP)
1P4	1.4	0.37 (0.5)
2P3	2.3	0.75 (1.0)
4P0	4.0	1.5 (2.0)
6P0	6.0	2.2 (3.0)
8P7	8.7	3.7 (5.0)

Output Current @ 100-120 Input or 200-240V Input

Code	Amps	kW (HP)
1P5	1.5	0.2 (0.25)
2P3	2.3	0.37 (0.5)
4P5	4.5	0.75 (1.0)
8P0	8.0	1.5 (2.0)
012	12	2.2 (3.0)
017	17.5	3.7 (5.0)

Product Selection

Drive Ratings					Catalog Number ①	Frame Size
Input Voltage	Output Voltage	kW	HP	Output Current		
100-120V 50/60 Hz 1-Phase No Filter	0-230V	0.2	0.25	1.5A	22A-V1P5N104	A
	3-Phase	0.37	0.5	2.3A	22A-V2P3N104	A
		0.75	1.0	4.5A	22A-V4P5N104	B
200-240V 50/60 Hz 1-Phase With Integral "S Type" EMC Filter	0-230V	0.2	0.25	1.5A	22A-A1P5N114	A
	3-Phase	0.37	0.5	2.3A	22A-A2P3N114	A
		0.75	1.0	4.5A	22A-A4P5N114	A
		1.5	2.0	8.0A	22A-A8P0N114	B
200-240V 50/60 Hz 1-Phase No Filter	0-230V	0.2	0.25	1.5A	22A-A1P5N104	A
	3-Phase	0.37	0.5	2.3A	22A-A2P3N104	A
		0.75	1.0	4.5A	22A-A4P5N104	A
		1.5	2.0	8.0A	22A-A8P0N104	B
200-240V 50/60 Hz 3-Phase No Filter	0-230V 3-Phase	0.2	0.25	1.5A	22A-B1P5N104	A
		0.37	0.5	2.3A	22A-B2P3N104	A
		0.75	1.0	4.5A	22A-B4P5N104	A
		1.5	2.0	8.0A	22A-B8P0N104	A
		2.2	3.0	12.0A	22A-B012N104	B
		3.7	5.0	17.5	22A-B017N104	B
380-480V 50/60 Hz 3-Phase No Filter	0-460V 3-Phase	0.37	0.5	1.4A	22A-D1P4N104	A
		0.75	1.0	2.3A	22A-D2P3N104	A
		1.5	2.0	4.0A	22A-D4P0N104	A
		2.2	3.0	6.0A	22A-D6P0N104	B
		3.7	5.0	8.7A	22A-D8P7N104	B

See page 13 for dimensions.

① For pricing information, refer to the PowerFlex 4 Price List, Publication 22A-PL001x.

Standard Drives Program

NEMA 1 Option Kit

Item	Description	Drive Frame	Catalog Number ①
IP30/NEMA 1/UL Type 1 Kit	Field installed kit. Converts drive to IP30/NEMA 1/UL Type 1 enclosure. Includes conduit box with mounting screws and plastic top panel.	A	22-JBAA
		B	22-JBAB

Communication Option Kits

Item	Description	Catalog Number ①
Serial Converter Module (RS485 to RS232)	Provides serial communication via DF1 protocol for use with DriveExplorer and Drive Executive software. Includes: DSI to RS232 serial converter (1) 1203-SCF serial cable (1) 22-RJ45CBL-C20 cable (1) DriveExplorer Lite CD (1)	22-SCM-232
DSI Cable	2.0 meter RJ45 to RJ45 cable, male to male connectors.	22-RJ45CBL-C20
Serial Cable	2.0 meter serial cable with locking low profile connector to connect to the serial converter and a 9-pin sub-miniature D female connector to connect to a computer.	1203-SFC
Null Cable Converter	For use when connecting the serial converter to DriveExplorer on a handheld PC.	1203-SNM
DriveExplorer™ Software (CD-ROM) Version 3.01 or later	“Windows” based software package that provides an intuitive means for monitoring or configuring Allen-Bradley drives and communications adapters online. Compatibility: Windows 95, 98, ME, NT 4.0 (Service Pack 3 or later), 2000, XP and CE ②	9306-4EXP01ENE
DriveExecutive™ Software (CD-ROM) Version 1.01 or later	“Windows” based software package that provides an intuitive means for monitoring or configuring Allen-Bradley drives and communications adapters online and offline. Compatibility: Windows 98, ME, NT 4.0 (Service Pack 3 or later), 2000 and XP	9303-4DTE01ENE

① For pricing information, refer to the PowerFlex 4 Price List, Publication 22A-PL001x.

② See www.ab.com/drive/driveexplorer.htm for supported devices.

Standard Drives Program

User Installed Options

Drive Ratings			EMC Line Filters		Dynamic Brake Modules	1321-3R Series Line Reactors
Input Voltage	kW	HP	S Type Filter Catalog Number ①	L Type Filter Catalog Number ③	Catalog Number	Catalog Number ⑤
120V 50/60 Hz 1-Phase	0.2	0.25	–	22-RF010-AL	–	–
	0.37	0.5	–	22-RF010-AL	–	–
	0.75	1.0	–	22-RF018-BL	160-BMA1	–
240V 50/60 Hz 1-Phase	0.2	0.25	②	22-RF010-AL	–	–
	0.37	0.5	②	22-RF010-AL	–	–
	0.75	1.0	②	22-RF010-AL	160-BMA1	–
	1.5	2.0	②	22-RF018-BL	160-BMA2	–
240V 50/60 Hz 3-Phase	0.2	0.25	22-RF9P5-AS	22-RF9P5-AL	–	1321-3R2-A
	0.37	0.5	22-RF9P5-AS	22-RF9P5-AL	–	1321-3R4-B
	0.75	1.0	22-RF9P5-AS	22-RF9P5-AL	160-BMA1	1321-3R4-A
	1.5	2.0	22-RF9P5-AS	22-RF9P5-AL	160-BMA2	1321-3R8-A
	2.2	3.0	22-RF021-BS	22-RF021-BL	160-BMA2	1321-3R12-A
	3.7	5.0	22-RF021-BS	22-RF021-BL	160-BMA2 ④	1321-3R18-A
480V 50/60 Hz 3-Phase	0.37	0.5	22-RF5P7-AS	22-RF5P7-AL	–	1321-3R2-B
	0.75	1.0	22-RF5P7-AS	22-RF5P7-AL	160-BMA1	1321-3R2-A
	1.5	2.0	22-RF5P7-AS	22-RF5P7-AL	160-BMA2	1321-3R4-B
	2.2	3.0	22-RF012-BS	22-RF012-BL	160-BMA2	1321-3R8-B
	3.7	5.0	22-RF012-BS	22-RF012-BL	160-BMA2 ④	1321-3R18-B

See pages 14-15 for dimensions.

- ① This filter is suitable for use with a cable length of at least 5 meters for Class A and 1 meter for Class B environments. The maximum allowable cable length was not available at publication.
- ② These ratings can be ordered with internal "S Type" filters.
- ③ This filter is suitable for use with a cable length of at least 100 meters for Class A and 5 meters for Class B environments. The maximum allowable cable length was not available at publication.
- ④ Must order two for a 3.7 kW (5 HP) application. The two dynamic brake modules must be wired in parallel.
- ⑤ Catalog numbers listed are for 3% impedance open style units. NEMA Type 1 and 5% impedance reactor types are also available.

Standard Drives Program

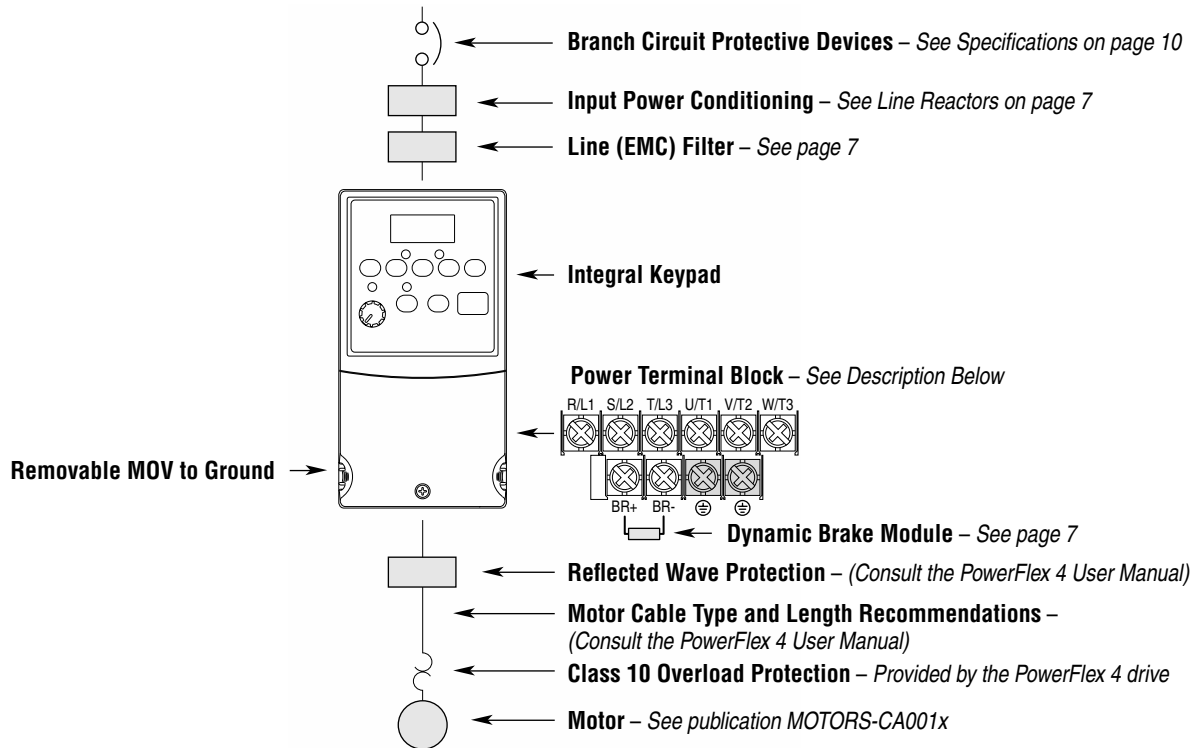
Installation Considerations

The PowerFlex 4 has the following built in protective features to help simplify installation.

- Ground fault protection during start up and running ensures reliable operation
- Electronic motor overload protection increases motor life
- Removable MOV to ground ensures compatibility with ungrounded systems
- 6kV transient protection provides increased robustness for 380-480V system voltages

There are many other factors that must be considered for optimal performance in any given application. The block diagram below highlights the primary installation considerations. Consult the PowerFlex 4 *User Manual*, Publication 22A-UM001x, available online at www.ab.com/manuals/dr, for detailed recommendations on input power conditioning, CE conformance (EMC filtering), dynamic braking, reflected wave protection, motor cable types and motor cable distances.

Block Diagram



Power Terminal Block

Terminal	Description
R/L1, S/L2	1-Phase Input
R/L1, S/L2, T/L3	3-Phase Input
U/T1	To Motor U/T1
V/T2	To Motor V/T2
W/T3	To Motor W/T3
BR+, BR-	Dynamic Brake Resistor Connection
⊕	Safety Ground - PE

Power Wiring

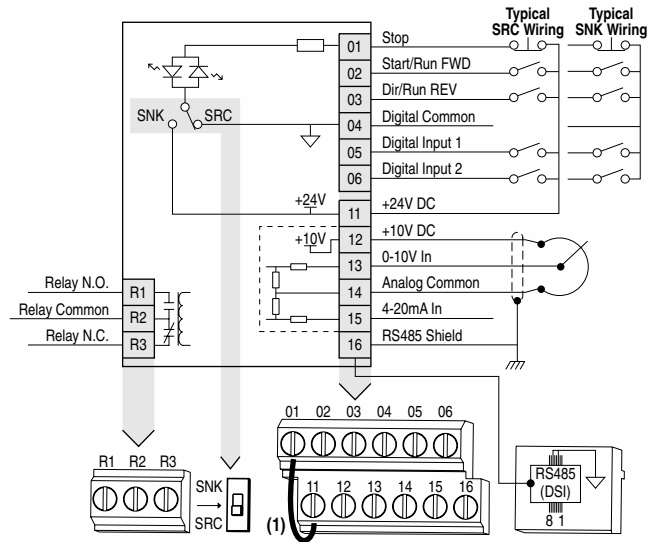
Frame	Maximum Wire Size ①	Minimum Wire Size ①	Torque
A	3.3 mm ² (12 AWG)	0.8 mm ² (18 AWG)	1.7-2.2 N-m (16-19 lb.-in.)
B	5.3 mm ² (10 AWG)	1.3 mm ² (16 AWG)	

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

Standard Drives Program

Control Wiring

- The control logic is 24V DC and can be set for either Sink or Source control via a DIP switch setting.
- Control terminal screws are sized for a conventional blade screw driver.
- I/O Terminals 1, 2 and 3 are dedicated for Stop, Start and Reverse operation respectively. These I/O Terminals can be programmed for 2- or 3-Wire operation to meet application requirements.
- I/O Terminals 4 and 5 are programmable and provide added flexibility. Programmable functions include:
 - Local Control
 - Jog
 - Second Accel/Decel
 - Clear Fault
 - Preset Frequencies
 - RS485 Control
 - Auxiliary Fault
- Speed can be controlled via a 0-10V input or 4-20 mA input. Both are electrically isolated from the drive.
- One form C relay can be programmed to provide the status of a wide variety of drive conditions.
- The drive is shipped with a jumper installed between I/O Terminals 01 and 11 to allow out of box operation from the keypad.



Terminal	Signal	Default	Description		
			30V DC	125V AC	240V AC
R1	Relay N.O.	Fault	Resistive	3.0A	3.0A
R2	Relay Common	–	Inductive	0.5A	0.5A
R3	Relay N.C.	Fault			

Sink/Source DIP Switch	Source (SRC)	Inputs can be wired as Sink (SNK) or Source (SRC) via DIP Switch setting.
------------------------	--------------	---

Terminal	Signal	Default	Description
01	Stop ①	Coast	The factory installed jumper or a normally closed input must be present for the drive to start.
02	Start/Run FWD	Not Active	Command comes from the integral keypad by default. To disable reverse operation, see A095 [Reverse Disable].
03	Dir/Run REV	Not Active	
04	Digital Common	–	For digital inputs. Electronically isolated with digital inputs from analog I/O.
05	Digital Input 1	Preset Frequencies	Program with A051 [Digital In1 Sel].
06	Digital Input 2	Preset Frequencies	Program with A052 [Digital In2 Sel].
11	+24V DC	–	Drive supplied power for digital inputs. Maximum output current is 100mA.
12	+10V DC	–	Drive supplied power for 0-10V external potentiometer. Maximum output current is 15mA.
13	0-10V In ③	Not Active	For external 0-10V input supply (input impedance = 100k ohm) or potentiometer wiper.
14	Analog Common	–	For 0-10V In or 4-20mA In. Electronically isolated with analog inputs from digital I/O.
15	4-20mA In ③	Not Active	For external 4-20mA input supply (input impedance = 250 ohm).
16	RS485 (DSI) Shield	–	Terminal should be connected to safety ground - PE when using the RS485 (DSI) communications port.

③ Only one analog frequency source may be connected at a time. If more than one reference is connected at the same time, an undetermined frequency reference will result.

Standard Drives Program

Specifications

Drive Ratings

Catalog Number	Output Ratings		Input Ratings			Branch Circuit Protection		Power Dissipation
	kW (HP)	Amps	Voltage Range	kVA	Amps	Fuse Rating	Other Devices	IP20 Open Watts
100 - 120V AC – 1-Phase								
22A-V1P5N104	0.2 (0.25)	1.5	90-126	0.75	6.1	10	10	25
22A-V2P3N104	0.37 (0.5)	2.3	90-126	1.15	9.4	15	15	30
22A-V4P5N104	0.75 (1.0)	4.5	90-126	2.25	18.4	30	30	50
200 - 240V AC – 1-Phase ①								
22A-A1P5N104	0.2 (0.25)	1.5	180-265	0.75	3.1	10	5	25
22A-A2P3N104	0.37 (0.5)	2.3	180-265	1.15	4.7	10	10	30
22A-A4P5N104	0.75 (1.0)	4.5	180-265	2.25	9.2	15	15	50
22A-A8PON104	1.5 (2.0)	8.0	180-265	4.0	16.4	30	25	80
200 - 240V AC – 3-Phase								
22A-B1P5N104	0.2 (0.25)	1.5	180-265	0.75	1.8	3	5	25
22A-B2P3N104	0.37 (0.5)	2.3	180-265	1.15	2.7	6	5	30
22A-B4P5N104	0.75 (1.0)	4.5	180-265	2.25	5.3	10	7	50
22A-B8PON104	1.5 (2.0)	8.0	180-265	4.0	9.5	15	15	80
22A-B012N104	2.2 (3.0)	12.0	180-265	5.5	14.2	25	25	115
22A-B017N104	3.7 (5.0)	17.5	180-265	8.6	20.7	35	30	165
380 - 480V AC – 3-Phase								
22A-D1P4N104	0.37 (0.5)	1.4	340-528	1.4	1.7	3	3	30
22A-D2P3N104	0.75 (1.0)	2.3	340-528	2.3	2.7	6	4	40
22A-D4PON104	1.5 (2.0)	4.0	340-528	4.0	4.7	10	7	60
22A-D6PON104	2.2 (3.0)	6.0	340-528	5.9	7.1	15	10	90
22A-D8P7N104	3.7 (5.0)	8.7	340-528	8.6	10.3	15	15	145

Input/Output Ratings

Output Frequency: 0-240 Hz (Programmable)
Efficiency: 97.5% (Typical)

Approvals



Digital Control Inputs (Input Current = 6mA)

SRC (Source) Mode:
18-24V = ON
0-6V = OFF

SNK (Sink) Mode:
0-6V = ON
18-24V = OFF

Analog Control Inputs

4-20mA Analog: 250 ohm input impedance
0-10V DC Analog: 100k ohm input impedance
External Pot: 1-10k ohms, 2 Watt minimum

Control Output

Programmable Output (form C relay)
Resistive Rating: 3.0A at 30V DC, 3.0A at 125V AC, 3.0A at 240V AC
Inductive Rating: 0.5A at 30V DC, 0.5A at 125V AC, 0.5A at 240V AC

Fuses and Circuit Breakers

Recommended Fuse Type: UL Class J, CC, T or Type BS88; 600V (550V) or equivalent.
Other Protective Devices: 140M-xxx (A-B Bulletin 140 Manual Motor Starter) or HMCP circuit breaker or equivalent.

Protective Features

Motor Protection: I²t overload protection - 150% for 60 Secs, 200% for 3 Secs (Provides Class 10 protection)
Overcurrent: 200% hardware limit, 300% instantaneous fault
Over Voltage: 100-120V AC Input – Trip occurs at 405V DC bus voltage (equivalent to 150V AC incoming line)
200-240V AC Input – Trip occurs at 405V DC bus voltage (equivalent to 290V AC incoming line)
380-480V AC Input – Trip occurs at 810V DC bus voltage (equivalent to 575V AC incoming line)
Under Voltage: 100-120V AC Input – Trip occurs at 210V DC bus voltage (equivalent to 75V AC incoming line)
200-240V AC Input – Trip occurs at 210V DC bus voltage (equivalent to 150V AC incoming line)
380-480V AC Input – Trip occurs at 390V DC bus voltage (equivalent to 275V AC incoming line)

Control Ride Through: Minimum ride through is 0.5 Secs - typical value 2 Secs

Faultless Power Ride Through: 100 milliseconds

Dynamic Braking

Internal brake IGBT included with all ratings 0.75 kW (1 HP) and larger. Refer to page 7 for ordering information.

① 200-240V AC - 1-Phase drives are also available with an integral EMC filter. Catalog suffix changes from N104 to N114.

Standard Drives Program

Specifications, Continued

Environment	
Altitude:	1000 m (3300 ft) max. without derating
Ambient Operating Temperature	
IP20:	-10 to 50 degrees C (14 to 122 degrees F)
NEMA 1:	-10 to 40 degrees C (14 to 104 degrees F)
Storage Temperature:	-40 to 85 degrees C (-40 to 185 degrees F)
Atmosphere:	Important: Drive must not be installed in an area where the ambient atmosphere contains volatile or corrosive gas, vapors or dust. If the drive is not going to be installed for a period of time, it must be stored in an area where it will not be exposed to a corrosive atmosphere.
Relative Humidity:	0 to 95% non-condensing
Shock (operating):	15G peak for 11ms duration (± 1.0 ms)
Vibration (operating):	1G peak, 5 to 2000 Hz
Control	
Carrier Frequency	2-16 kHz. Drive rating based on 4 kHz.
Frequency Accuracy	
Digital Input:	Within $\pm 0.05\%$ of set output frequency.
Analog Input:	Within 0.5% of maximum output frequency.
Speed Regulation - Open Loop with Slip Compensation:	$\pm 2\%$ of base speed across a 40:1 speed range.
Stop Modes:	Multiple programmable stop modes including - Ramp, Coast, DC-Brake, Ramp-to-Hold and S Curve.
Accel/Decel:	Two independently programmable accel and decel times. Each time may be programmed from 0 - 600 seconds in 0.1 second increments.
Intermittent Overload:	150% Overload capability for up to 1 minute 200% Overload capability for up to 3 seconds
Electronic Motor Overload Protection	Class 10 protection with speed sensitive response.

Standard Drives Program

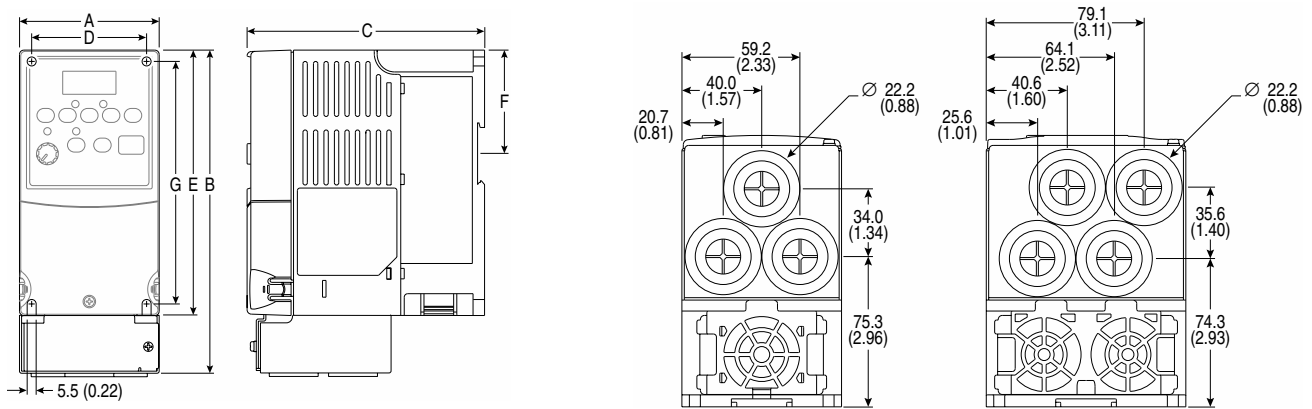
Parameter Descriptions

Parameter Number	Parameter Name	Description	Factory Default
Display Group			
d001	Output Freq	Output frequency present at T1, T2 & T3 (U, V & W)	Read Only
d002	Commanded Freq	Value of the active frequency command	Read Only
d003	Output Current	Output current present at T1, T2 & T3 (U, V & W)	Read Only
d004	Output Voltage	Output voltage present at T1, T2 & T3 (U, V & W)	Read Only
d005	DC Bus Voltage	Present DC bus voltage level	Read Only
d006	Drive Status	Present operating condition of the drive	Read Only
d007-d009	Fault x Code	A code that represents a drive fault	Read Only
d010	Process Display	The output frequency scaled by parameter A099 [Process Factor]	Read Only
d012	Control Source	Displays the source of the Start Command and Speed Reference	Read Only
d013	Contrl In Status	Status of the control terminal block control inputs	Read Only
d014	Dig In Status	Status of the control terminal block digital inputs	Read Only
d015	Comm Status	Status of the communications device	Read Only
d016	Control SW Ver	Main Control Board software version	Read Only
d017	Drive Type	Used by Rockwell Automation field service personnel	Read Only
d018	Elapsed Run Time	Accumulated time drive is outputting power	Read Only
d019	Testpoint Data	The present value of the function selected in parameter A102 [Testpoint Sel]	Read Only
Basic Program Group			
P031	Motor NP Volts	20 to 240V for 120V and 240V drives, 20 to 460V for 460V drives	230 or 460
P032	Motor NP Hertz	10 to 240 Hz	60
P033	Motor OL Current	0.0 Amps to (Drive Rated Amps x 2) in units of 0.1 Amps	Based on Drive Rating
P034	Minimum Freq	0.0 to 240.0 Hz	0.0
P035	Maximum Freq	0.0 to 240.0 Hz	60.0
P036	Start Source	6 settings; Keypad, 3-Wire, 2-Wire Level Sensitive, 2-Wire High Speed, RS485 (DSI) Port	Keypad
P037	Stop Mode	8 settings; Ramp-Clear Fault, Coast-Clear Fault, DC Brake-Clear Fault, DC Brake w/Shutoff-Clear Fault, Ramp, Coast, DC Brake, DC Brake w/Shutoff	Ramp-Clear Fault
P038	Speed Reference	5 settings; Drive Potentiometer, Internal Freq, 0-10V Input/Remote Potentiometer, 4-20 mA Input, Preset Freq 0-3, RS485 (DSI) Port	Drive Potentiometer
P039	Accel Time 1	0.0 to 600.0 seconds	10.0
P040	Decel Time 1	0.1 to 600.0 seconds	10.0
P041	Reset To Defaults	Used to reset drive to factory default settings	0
Advanced Program Group			
A051, A052	Digital Inx Sel	8 settings; Not Used, Accel 2 & Decel 2, Jog, Auxiliary Fault, Preset Frequencies, Local, RS485 (DSI) Port, Clear Fault	Preset Frequencies
A055	Relay Out Sel	10 different settings for a variety of drive status conditions	Ready (Not Faulted)
A056	Relay Out Level	0.0 to 9999	0.0
A067	Accel Time 2	0.0 to 600.0 seconds	20.0
A068	Decel Time 2	0.1 to 600.0 seconds	20.0
A069	Internal Freq	0.0 to 240.0 Hz	60.0
A070	Preset Freq 0	0.0 to 240.0 Hz	0.0
A071	Preset Freq 1	0.0 to 240.0 Hz	5.0
A072	Preset Freq 2	0.0 to 240.0 Hz	10.0
A073	Preset Freq 3	0.0 to 240.0 Hz	20.0
A078	Jog Frequency	0.0 to (Value set in P035 [Maximum Freq])	10.0 Hz
A079	Jog Accel/Decel	0.1 to 600.0 seconds	10.0
A080	DC Brake Time	0.0 to 90.0 seconds	0.0
A081	DC Brake Level	0.0 to (Drive Rated Amps x 1.8)	Drive Rated Amps x 0.05
A082	DB Resistor Sel	Used to set percent duty cycle for external dynamic braking	Disabled
A083	S Curve %	0 to 100%	0% (Disabled)
A084	Start Boost	14 boost settings (in % of P031 [Motor NP Volts]), redefines the Volts per Hertz curve	5.0
A088	Maximum Voltage	20 to Drive Rated Volts	Drive Rated Volts
A089	Current Limit	0.1 to (Drive Rated Volts x 1.8)	Drive Rated Amps x 1.5
A090	Motor OL Select	3 settings; No Derate, Minimum Derate, Maximum Derate	No Derate
A091	PWM Frequency	2.0 to 16.0 kHz	4.0
A092	Auto Rstrt Tries	0 to 9	0
A093	Auto Rstrt Delay	0.0 to 120.0 seconds	1.0
A094	Start At PowerUp	2 settings; Disabled, Enabled	Disabled
A095	Reverse Disable	2 settings; Reverse Enabled, Reverse Disabled	Reverse Enabled
A096	Flying Start En	2 settings; Disabled, Enabled	Disabled
A097	Compensation	4 settings; Disabled, Electrical, Mechanical, Both	Disabled
A098	SW Current Trip	Software instantaneous trip, 0.0 to (Drive Rated Amps x 2)	0.0 (Disabled)
A099	Process Factor	0.1 to 999.9	30.0
A100	Fault Clear	Resets a fault and clears the fault queue	Ready
A101	Program Lock	Protects parameters against change by unauthorized personnel	Unlocked
A102	Testpoint Sel	Used by Rockwell Automation field service personnel	400
A103	Comm Data Rate	6 settings; 1200, 2400, 4800, 9600, 19.2K, 38.4K	9600
A104	Comm Node Addr	1 to 247	100
A105	Comm Loss Action	4 settings; Fault, Coast to Stop, Stop, Continue Last Speed	Fault
A106	Comm Loss Time	0.1 to 60.0 seconds	5.0
A107	Comm Format	3 settings; RTU 8-N-1, RTU 8-E-1, RTU 8-O-1	RTU 8-N-1

Standard Drives Program

Approximate Dimensions

PowerFlex 4 Drive



Dimensions are in millimeters and (inches). Weights are in kilograms and (pounds).

Frame	A	B ①	C	D	E ②	F	G	Shipping Weight
A	80 (3.15)	185 (7.28)	136 (5.35)	67 (2.64)	152 (5.98)	59.3 (2.33)	140 (5.51)	1.4 (3.1)
B	100 (3.94)	213 (8.39)	136 (5.35)	87 (3.43)	180 (7.09)	87.4 (3.44)	168 (6.61)	2.2 (4.9)

Ratings are in kW and (HP).

Frame	120V AC – 1-Phase	240V AC – 1-Phase	240V AC – 3-Phase	480V AC – 3-Phase
A	0.2 (0.25) 0.37(0.5)	0.2 (0.25) 0.37 (0.5) 0.75 (1.0)	0.2 (0.25) 0.37 (0.5) 0.75 (1.0) 1.5 (2.0)	0.37 (0.5) 0.75 (1.0) 1.5 (2.0)
B	0.75 (1.0)	1.5 (2.0)	2.2 (3.0) 3.7 (5.0)	2.2 (3.0) 3.7 (5.0)

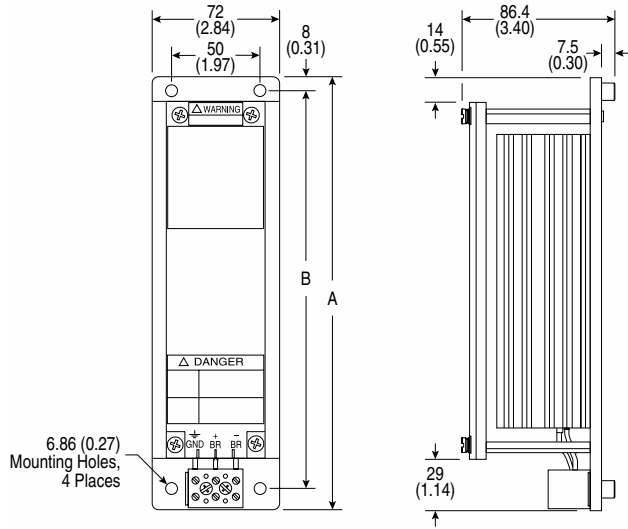
① Overall height of drive with IP 30/NEMA 1/ UL Type 1 option kit installed.

② Overall height of standard IP 20/Open Type drive.

Standard Drives Program

Dynamic Brake Modules

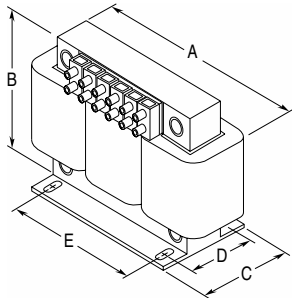
Dimensions are in millimeters and (inches).



Catalog Number	A	B
160-BMA1, -BMB1	245 (9.64)	225 (8.86)
160-BMA2, -BMB2	334 (13.15)	314 (12.36)

Bulletin 1321-3R Series Line Reactors

Dimensions are in millimeters and (inches). Weights are in kilograms and (pounds).

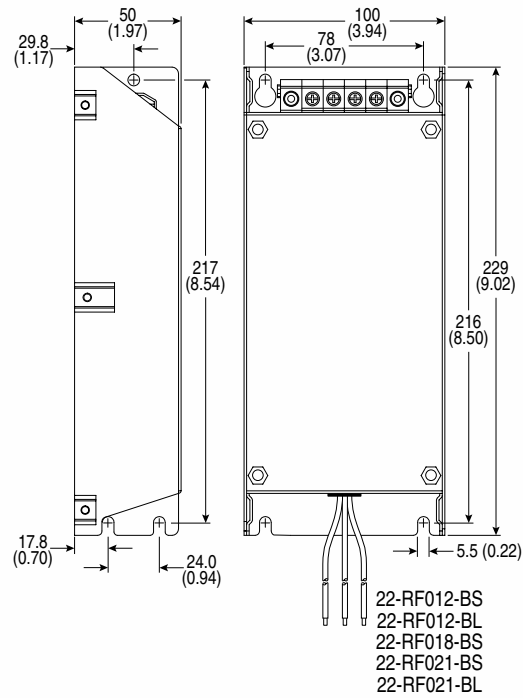
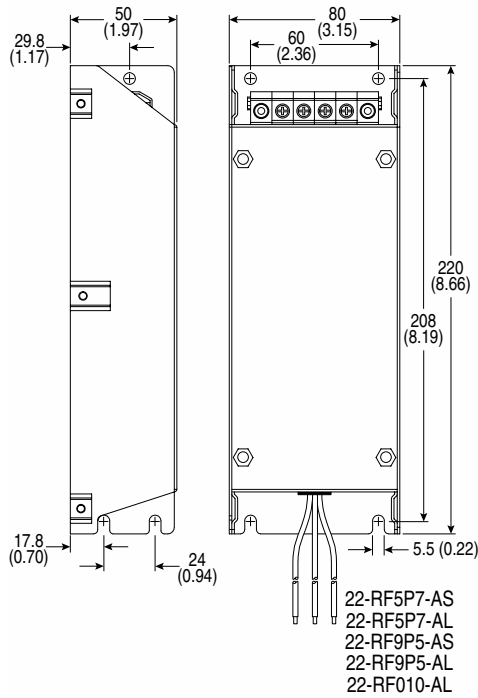


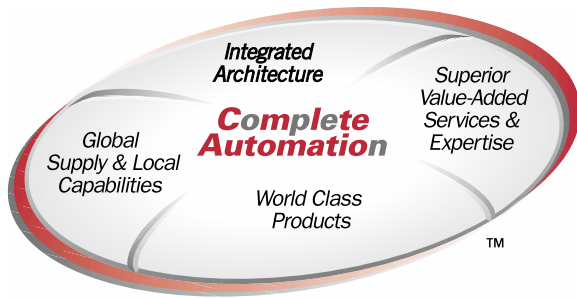
Catalog Number	A	B	C	D	E	Weight
1321-3R2-A	112 (4.40)	104 (4.10)	70 (2.75)	50 (1.98)	37 (1.44)	1.8 (4)
1321-3R2-B	112 (4.40)	104 (4.10)	70 (2.75)	50 (1.98)	37 (1.44)	1.8 (4)
1321-3R4-A	112 (4.40)	104 (4.10)	76 (3.00)	50 (1.98)	37 (1.44)	1.8 (4)
1321-3R4-B	112 (4.40)	104 (4.10)	76 (3.00)	50 (1.98)	37 (1.44)	1.8 (4)
1321-3R8-A	152 (6.00)	127 (5.00)	76 (3.00)	53 (2.10)	51 (2.00)	3.1 (7)
1321-3R8-B	152 (6.00)	127 (5.00)	76 (3.00)	53 (2.10)	51 (2.00)	3.6 (8)
1321-3R12-A	152 (6.00)	127 (5.00)	76 (3.00)	53 (2.10)	51 (2.00)	4.1 (9)
1321-3R18-A	152 (6.00)	133 (5.25)	79 (3.10)	54 (2.13)	51 (2.00)	4.1 (9)
1321-3R18-B	152 (6.00)	133 (5.25)	86 (3.40)	63 (2.48)	51 (2.00)	5.4 (12)

Standard Drives Program

EMC Line Filters

Dimensions are in millimeters and (inches).





The Allen-Bradley PowerFlex family of AC drives provides a single-source solution for virtually any drive application requirement ranging from 0.2 to 3,000 kW (0.25 to 4,000 hp). Significant commonality across multiple platforms including networks, operator interface, programming and hardware make PowerFlex drives easy to start up, operate and maintain. Multi-lingual programming, operator interface text and voltage-sensitive defaults in PowerFlex drives will help global OEMs and end-users save time and money during set-up, integration and maintenance of virtually any automation system.

Rockwell Automation supports drive users whenever and wherever needed, providing drive specialists and manufacturing expertise for unmatched service and support around the globe. In fact, one of every five Rockwell Automation employees is in the field with users every day. Rockwell Automation also offers a full spectrum of value-added services and expertise to help simplify maintenance and enhance productivity.

Rockwell Automation is committed to helping its customers meet ever-changing demands. PowerFlex drives illustrate our commitment to user productivity through timely delivery of world-class products and continued backward compatibility to minimize life-cycle costs. Count on Rockwell Automation to be your Complete Automation™ partner – now and in the future.

For further information on PowerFlex drives visit our web site at:
www.abpowerflex.com

www.rockwellautomation.com

Corporate Headquarters

Rockwell Automation, 777 East Wisconsin Avenue, Suite 1400, Milwaukee, WI, 53202-5302 USA, Tel: (1) 414.212.5200, Fax: (1) 414.212.5201

Headquarters for Allen-Bradley Products, Rockwell Software Products and Global Manufacturing Solutions

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe: Rockwell Automation SA/NV, Vorstlaan/Boulevard du Souverain 36-BP 3A/B, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Headquarters for Dodge and Reliance Electric Products

Americas: Rockwell Automation, 6040 Ponders Court, Greenville, SC 29615-4617 USA, Tel: (1) 864.297.4800, Fax: (1) 864.281.2433

Europe: Rockwell Automation, Brühlstraße 22, D-74834 Elztal-Dallau, Germany, Tel: (49) 6261 9410, Fax: (49) 6261 1774

Asia Pacific: Rockwell Automation, 55 Newton Road, #11-01/02 Revenue House, Singapore 307987, Tel: (65) 351 6723, Fax: (65) 355 1733

U.S. Allen-Bradley Drives Technical Support

Tel: (1) 262.512.8176, Fax: (1) 262.512.2222, Email: support@drives.ra.rockwell.com, Online: www.ab.com/support/abdrives