



Technical Data

PowerFlex® 70 AC Drives



Bringing Together Leading Brands in Industrial Automation

PowerFlex® 70 AC Drive Technical Data

Optimized Simplicity

PowerFlex® 70 drives are designed to worldwide standards and ratings, allowing out-of-the-box performance around the globe. Available ratings include: 0.5 to 10 HP output at 240V AC input, 0.5 to 50 HP output at 480V AC input, 0.5 to 20 HP output at 600V AC input.

The PowerFlex 70 drive can be used with a full featured LCD Human Interface Module, which provides multilingual text for startup, metering, programming and troubleshooting.

The PowerFlex 70 can be programmed for either Volts per Hertz or Sensorless Vector Control to cover a wide range of applications from fans to extruders.

Optional internal communication modules provide fast and efficient control and/or data exchange with host controllers over popular interfaces. These interfaces include: DeviceNet™, EtherNet, ControlNet™, Remote I/O, Serial Communications and other open control and communication networks. PC tools such as DriveExplorer™ and DriveTools™ SP assist with programming, monitoring, and troubleshooting the PowerFlex 70.

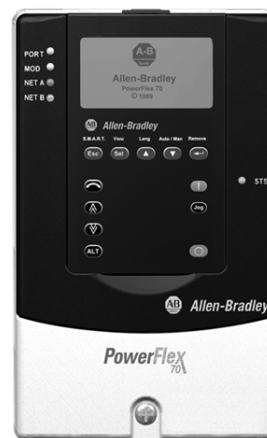


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Product Overview

Flexible Packaging and Mounting

IP20, NEMA Type 1 – For conventional mounting inside or outside a control cabinet. Conduit plate is vertically removable for easy installation and replacement without disturbing conduit.

IP66, NEMA Type 4X/12 (Indoor Use) – For mounting directly in the production environment. Listed by UL to resist dust, dirt, etc. and to survive high pressure water spray. Also certified by NSF to assure conformity with international food equipment standards.

Flange Type – For mounting heatsink through back of an enclosure, thus removing a large portion of the heat inside a cabinet. The backside is rated IP66 and UL (NEMA) Type 4X/12 for both indoor and outdoor use.



Space Saving Hardware Features

Zero Stacking™ - Drives can be mounted directly next to one another with no reduction of ambient temperature rating (50° C).

Integral EMC Filtering provides a compact, all-in-one package solution for meeting EMC requirements, including CE in Europe.

Integral Dynamic Brake Transistor delivers a cost-effective means of switching regenerative energy without costly external chopper circuits.

Internal Dynamic Brake Resistor requires no extra panel space, and supplies a large amount of braking torque for short periods.

Easy to Use Human Interface Tools

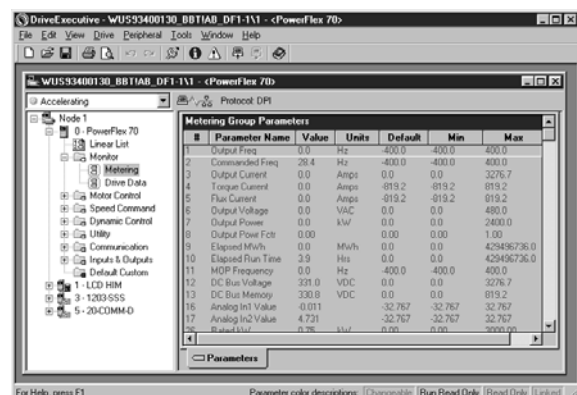
PowerFlex 7-Class LCD Human Interface Modules provide:

- Large and easy to read 7 line backlit display
- Variety of languages (English, French, German, Italian, Spanish, Portuguese, Dutch)
- Alternate function keys for shortcuts to common tasks
- “Calculator-like” number pad for fast and easy data entry (Full Numeric version only)
- Control keys for local start, stop, speed, and direction
- Remote versions for panel mount applications



Family of PC based configuration tools:

- **DriveExplorer and DriveExplorer Lite:** A simple and flexible “On-line” tool for monitoring and configuration while connected to a drive.
- **DriveTools™ SP:** A suite of software tools which provide an intuitive means for programming, troubleshooting and maintaining Allen-Bradley AC and DC drives.



Product Overview

Control and Performance Features

Standard Control

Sensorless Vector Control develops high torque over a wide speed range, and adapts to individual motor characteristics.

Fast acting **Current Limit** and **Bus Voltage Regulation** result in maximum acceleration and deceleration without tripping.

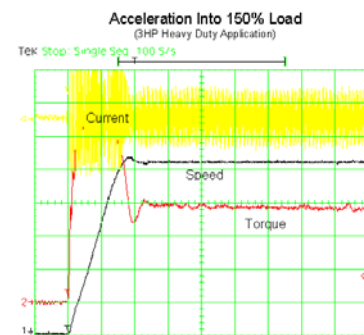
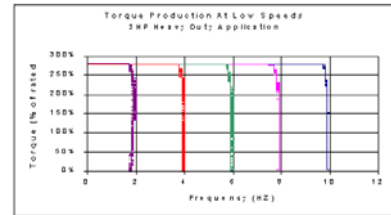
Flying Start delivers smooth connection into rotating loads, regardless of commanded direction, without the need for any speed feedback device.

PI Control can eliminate the need for a separate process loop controller.

Inertia Ride-Through offers tripless operation during a prolonged power outage by using the rotating energy stored in high inertia, low friction loads.

User Sets, allowing up to three complete sets of parameter data, can be individually loaded for different batch processes.

Slip compensation delivers minimum of 0.5% open loop speed regulation across a wide speed range, eliminating the need for speed feedback devices in some applications.



Enhanced Control

All the features of Standard Control, plus:

Available Now:

Safe Off Option, the first offering available within the DriveGuard™ series of safety solutions, prevents a drive from delivering rotational energy to motors by integrating a safety circuit with the drive's power switching signals. This solution meets EN 954-1, Category 3.

Dedicated Enable Input is provided by jumper removal for systems requiring absolute drive disable regardless of pacemotor changes.

4-20mA Output instead of 0-10V can be selected for the analog outputs.

PTC Analog Input provides accurate motor thermal protection when using a motor temperature feedback device.

Plus More (see user manual for complete list of additional features)

Coming Fall 2004:

Encoder Option provides closed loop speed regulation.

Droop Control for load sharing applications.

Sleep/Wake Control for analog control of start and stop.

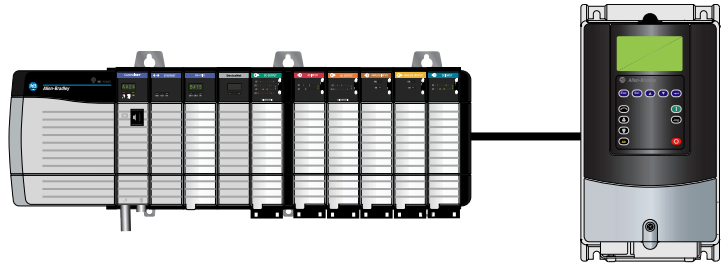
Torque Input for applications requiring direct control of torque rather than speed.

Plus More (contact factory for complete list of features planned for this release)

Product Overview

Unsurpassed Capability in Network Communications

PowerFlex 70 drives are fully compatible with Allen-Bradley drive's wide variety of DPI communication adapters, offering the following benefits:



DeviceNet	ControlNet	EtherNet/IP	Remote I/O	RS-485 DF1	Profibus	Interbus-S	
✓	✓	✓					(Unconnected Messaging) permits other network devices (e.g. PanelView) to communicate directly to a drive without routing the communication through the network scanner.
✓	✓	✓		✓			Adapter Routing -- Plug PC into one drive and talk to other Allen-Bradley drives on same network, without being routed through the network scanner.
✓	✓	✓	✓	✓	✓	✓	Access to 100% of all parameters over the network.
✓		✓			✓		AutoBaud capability makes initial connections less problematic.
✓							Change Of State significantly reduces network traffic by configuring control messages to be sent only upon customer defined states. Very flexible configuration for each node (Example: "reference must change by more than 5%").
✓		✓					Peer Control provides master slave type control between drives, where one or more slave drives (consumers) can run based on the status of a master drive (producer), which can also significantly reduce network traffic.
✓							ADR (Automatic Device Replacement) saves significant time and effort when replacing a drive, by allowing the scanner to be configured to automatically detect a new drive and download the required parameter settings.
✓	✓	✓	✓	✓	✓	✓	Flexible Fault Configuration – Adapters can be programmed to take fault based actions such as ramp to stop, coast to stop, and hold last state, as well as send user configurable logic control and speed reference values. In addition, different actions can be taken based on whether the network experienced a serious problem (broken cable etc.) versus a network idle condition (PLC set to "Program").

Product Selection Guide

Catalog Number Explanation

20A	B	2P1	A	1	A	Y	Y	N	N	C	0			
Drive	Voltage Rating	Rating	Enclosure	HIM (1)	Documentation (2)	Brake IGBT	Brake Resistor	Emission Class	Comm Slot	Control & I/O (3)	Feedback			
Code Type 20A 70				Code Type A English Manual P Portuguese Manual S Spanish Manual N No Manual		Code w/Brake Resistor Y Yes N No			Code Version C ControlNet (Coax) D DeviceNet E EtherNet/IP H RS485 HVAC R RIO S RS485 DF-1 N N/A					
Code Voltage Ph. B 240V AC 3 C 400V AC 3 D 480V AC 3 E 600V AC 3				Code Interface Module 0 Blank HIM 2 Digital LCD HIM 3 Full Numeric LCD HIM 4 Analog LCD HIM 5 Prog. Only LCD HIM		Code w/Brake IGBT Y Yes			Code Rating A Filtered (Excluding 600V AC) A(4) & B Frames (Optional) C & D Frames (Standard) N Not Filtered A & B Frames (Optional) C & D Frames NA (600V AC only)					
			Code Enclosure A Panel Mount - IP 20, NEMA Type 1 C Wall/Machine Mount = IP66, NEMA 4X/12 (Indoor Use) F Flange Mount - Front = IP 20, NEMA Type 1; Heatsink = IP66, NEMA Type 4X/12 G Wall/Machine Mount = IP54, NEMA Type 12						Codes Control Safety I/O Feedback C0 Enhanced None None G0 Enhanced 24V DC/AC None					
(1) IP66, NEMA 4X/12 (Code C) is available on with HIM codes 0, 3, or 5. (2) All drives ship with multilingual Quick Starts (3) Frame E ratings are only available with Enhanced Control. (4) Increases A Frame size to B.														
Output Current @ 600V 60Hz Input			Output Current @ 480V 60Hz Input			Output Current @ 400V 50Hz Input			Output Current @ 240V 60Hz Input			Output Current @ 208V 60Hz Input		
Code	Amps	kW (HP)	Code	Amps	kW (HP)	Code	Amps	kW (HP)	Code	Amps	kW (HP)	Code	Amps	kW (HP)
0P9	0.9	0.37 (0.5)	1P1	1.1	0.37 (0.5)	1P3	1.3	0.37 (0.5)	2P2	2.2	0.37 (0.5)	2P2	2.5	0.37 (0.5)
1P7	1.7	0.75 (1.0)	2P1	2.1	0.75 (1.0)	2P1	2.1	0.75 (1.0)	4P2	4.2	0.75 (1.0)	4P2	4.8	0.75 (1.0)
2P7	2.7	1.5 (2.0)	3P4	3.4	1.5 (2.0)	3P5	3.5	1.5 (2.0)	6P8	6.8	1.5 (2.0)	6P8	7.8	1.5 (2.0)
3P9	3.9	2.2 (3.0)	5P0	5.0	2.2 (3.0)	5P0	5.0	2.2 (3.0)	9P6	9.6	2.2 (3.0)	9P6	11	2.2 (3.0)
6P1	6.1	4.0 (5.0)	8P0	8.0	3.7 (5.0)	8P7	8.7	4.0 (5.0)	015	15.3	4.0 (5.0)	015	17.5	4.0 (5.0)
9P0	9.0	5.5 (7.5)	011	11	5.5 (7.5)	011	11.5	5.5 (7.5)	022	22	5.5 (7.5)	022	25.3	5.5 (7.5)
011	11	7.5 (10)	014	14	7.5 (10)	015	15.4	7.5 (10)	028	28	7.5 (10)	028	32.2	7.5 (10)
017	17	11 (15)	022	22	11 (15)	022	22	11 (15)						
022	22	15 (20)	027	27	15 (20)	030	30	15 (20)						
			034	34	18.5 (25)	037	37	18.5 (25)						
			040	40	22 (30)	043	43	22 (30)						
			052	52	30 (40)	060	60	30 (40)						
			065	65	37 (50)	072	72	37 (50)						

Product Selection Guide

PowerFlex 70 Drives — Panel Mount - IP 20, NEMA Type 1

200-240V AC, Three-Phase Drives (For pricing information, refer to the PowerFlex 70 Price List, Publication 20A-PL001...)

Output Amps						Nominal Power Ratings				IP20, NEMA Type 1 with HIM	Frame Size
240V AC Input ①			208V AC Input			Normal Duty		Heavy Duty		Catalog Number	
Cont.	1 Min.	3 Sec.	Cont.	1 Min.	3 Sec.	kW	HP	kW	HP	20A...	
2.2	2.4	3.3	2.5	2.7	3.7	0.37	0.5	0.25	0.33	B2P2A3AYNNNC0	A
4.2	4.8	6.4	4.8	5.5	7.4	0.75	1	0.55	0.75	B4P2A3AYNNNC0	A
6.8	9	12	7.8	10.3	13.8	1.5	2	1.1	1.5	B6P8A3AYNNNC0	B
9.6	10.6	14.4	11	12.1	16.5	2.2	3	1.5	2	B9P6A3AYNNNC0	B
15.3	17.4	23.2	17.5	19.2	26.2	4	5	3	3	B015A3AYNANC0	C
22	24.2	33	25.3	27.8	37.9	5.5	7.5	4	5	B022A3AYNANC0	D
28	33	44	32.2	37.9	50.6	7.5	10	5.5	7.5	B028A3AYNANC0	D

380-480V AC, Three-Phase Drives (For pricing information, refer to the PowerFlex 70 Price List, Publication 20A-PL001...)

Output Amps						Nominal Power Ratings				IP20, NEMA Type 1 with HIM	Frame Size
480V AC Input ①			380-400V AC Input			Normal Duty		Heavy Duty		Catalog Number	
Cont.	1 Min.	3 Sec.	Cont.	1 Min.	3 Sec.	kW	HP	kW	HP	20A...	
1.1	1.2	1.6	1.3	1.4	1.9	0.37	0.5	0.25	0.33	D1P1A3AYNNNC0	A
2.1	2.4	3.2	2.1	2.4	3.2	0.75	1	0.55	0.75	D2P1A3AYNNNC0	A
3.4	4.5	6	3.5	4.5	6	1.5	2	1.1	1.5	D3P4A3AYNNNC0	A
5	5.5	7.5	5	5.5	7.5	2.2	3	1.5	2	D5P0A3AYNNNC0	B
8	8.8	12	8.7	9.9	13.2	4	5	3	3	D8P0A3AYNNNC0	B
11	12.1	16.5	11.5	13	17.4	5.5	7.5	4	5	D011A3AYNANC0	C
14	16.5	22	15.4	17.2	23.1	7.5	10	5.5	7.5	D014A3AYNANC0	C
22	24.2	33	22	24.2	33	11	15	7.5	10	D022A3AYNANC0	D
27	33	44	30	33	45	15	20	11	15	D027A3AYNANC0	D
34	40.5	54	37	45	60	18.5	25	15	20	D034A3AYNANC0	D
40	51	68	43	56	74	22	30	18.5	25	D040A3AYNANC0	D
52	60	80	56	64.5	86	30	40	22	30	D052A3AYNANC0	E
65	78	104	72	84	112	37	50	30	40	D065A3AYNANC0	E

500-600V AC, Three-Phase Drives (For pricing information, refer to the PowerFlex 70 Price List, Publication 20A-PL001...)

Output Amps			Nominal Power Ratings				IP20, NEMA Type 1 with HIM	Frame Size
600V AC Input			Normal Duty		Heavy Duty		Catalog Number	
Cont.	1 Min.	3 Sec.	kW	HP	kW	HP	20A...	
0.9	1	1.4	0.37	0.5	0.25	0.33	E0P9A3AYNNNC0	A
1.7	1.9	2.6	0.75	1	0.55	0.75	E1P7A3AYNNNC0	A
2.7	3.6	4.8	1.5	2	1.1	1	E2P7A3AYNNNC0	A
3.9	4.3	5.8	2.2	3	1.5	1.5	E3P9A3AYNNNC0	B
6.1	6.7	9.1	4	5	3	3	E6P1A3AYNNNC0	B
9	9.9	13.5	5.5	7.5	4	5	E9P0A3AYNNNC0	C
11	13.5	18	7.5	10	5.5	7.5	E011A3AYNNNC0	C
17	18.7	25.5	11	15	7.5	10	E017A3AYNNNC0	D
22	25.5	34	15	20	11	15	E022A3AYNNNC0	D

① Catalog code corresponds to output amps in these columns. Drive must be programmed to lower voltage to obtain higher currents shown at right.

Product Selection Guide

PowerFlex 70 Drives — Wall / Machine Mount - IP 66, NEMA Type 4X/12 (Indoor Use)

200-240V AC, Three-Phase Drives (For pricing information, refer to the PowerFlex 70 Price List, Publication 20A-PL001...)

Output Amps						Nominal Power Ratings				IP66, NEMA Type 4X/12 with HIM	Frame Size
240V AC Input ①			208V AC Input			Normal Duty		Heavy Duty		Catalog Number	
Cont.	1 Min.	3 Sec.	Cont.	1 Min.	3 Sec.	kW	HP	kW	HP	20A...	
2.2	2.4	3.3	2.5	2.7	3.7	0.37	0.5	0.25	0.33	B2P2C3AYNNNNN	B
4.2	4.8	6.4	4.8	5.5	7.4	0.75	1	0.55	0.75	B4P2C3AYNNNNN	B
6.8	9	12	7.8	10.3	13.8	1.5	2	1.1	1.5	B6P8C3AYNNNNN	B
9.6	10.6	14.4	11	12.1	16.5	2.2	3	1.5	2	B9P6C3AYNNNNN	B
15.3	17.4	23.2	17.5	19.2	26.2	4	5	3	3	B015C3AYNANNN	D
22	24.2	33	25.3	27.8	37.9	5.5	7.5	4	5	B022C3AYNANNN	D
28	33	44	32.2	37.9	50.6	7.5	10	5.5	7.5	B028C3AYNANNN	D

380-480V AC, Three-Phase Drives (For pricing information, refer to the PowerFlex 70 Price List, Publication 20A-PL001...)

Output Amps						Nominal Power Ratings				IP66, NEMA Type 4X/12 with HIM	Frame Size
480V AC Input ①			380-400V AC Input			Normal Duty		Heavy Duty		Catalog Number	
Cont.	1 Min.	3 Sec.	Cont.	1 Min.	3 Sec.	kW	HP	kW	HP	20A...	
1.1	1.2	1.6	1.3	1.4	1.9	0.37	0.5	0.25	0.33	D1P1C3AYNNNNN	B
2.1	2.4	3.2	2.1	2.4	3.2	0.75	1	0.55	0.75	D2P1C3AYNNNNN	B
3.4	4.5	6	3.5	4.5	6	1.5	2	1.1	1.5	D3P4C3AYNNNNN	B
5	5.5	7.5	5	5.5	7.5	2.2	3	1.5	2	D5P0C3AYNNNNN	B
8	8.8	12	8.7	9.9	13.2	4	5	3	3	D8P0C3AYNNNNN	B
11	12.1	16.5	11.5	13	17.4	5.5	7.5	4	5	D011C3AYNANNN	D
14	16.5	22	15.4	17.2	23.1	7.5	10	5.5	7.5	D014C3AYNANNN	D
22	24.2	33	22	24.2	33	11	15	7.5	10	D022C3AYNANNN	D
27	33	44	30	33	45	15	20	11	15	D027C3AYNANNN	D
34	40.5	54	37	45	60	18.5	25	15	20	D034C3AYNANNN	D
40	51	68	43	56	74	22	30	18.5	25	D040C3AYNANNN	D
52	60	80	56	64.5	86	30	40	22	30	D052C3AYNANC0 ②	E
65	78	104	72	84	112	37	50	30	40	D065C3AYNANC0 ②	E

500-600V AC, Three-Phase Drives (For pricing information, refer to the PowerFlex 70 Price List, Publication 20A-PL001...)

Output Amps			Nominal Power Ratings				IP66/NEMA Type 4X/12 with HIM	Frame Size
600V AC Input			Normal Duty		Heavy Duty		Catalog Number	
Cont.	1 Min.	3 Sec.	kW	HP	kW	HP	20A...	
0.9	1	1.4	0.37	0.5	0.25	0.33	E0P9C3AYNNNNNN	B
1.7	1.9	2.6	0.75	1	0.55	0.75	E1P7C3AYNNNNNN	B
2.7	3.6	4.8	1.5	2	1.1	1	E2P7C3AYNNNNNN	B
3.9	4.3	5.8	2.2	3	1.5	1.5	E3P9C3AYNNNNNN	B
6.1	6.7	9.1	4	5	3	3	E6P1C3AYNNNNNN	B
9	9.9	13.5	5.5	7.5	4	5	E9P0C3AYNNNNNN	D
11	13.5	18	7.5	10	5.5	7.5	E011C3AYNNNNNN	D
17	18.7	25.5	11	15	7.5	10	E017C3AYNNNNNN	D
22	25.5	34	15	20	11	15	E022C3AYNNNNNN	D

① Catalog code corresponds to output amps in these columns. Drive must be programmed to lower voltage to obtain higher currents shown at right.

② Frame E ratings are only available with Enhanced Control.

PowerFlex 70 Drives — Wall / Machine Mount - IP 54, NEMA Type 12

380-480V AC, Three-Phase Drives (For pricing information, refer to the PowerFlex 70 Price List, Publication 20A-PL001...)

Output Amps						Nominal Power Ratings				IP66, NEMA Type 4X/12 with HIM	Frame Size
480V AC Input ①			380-400V AC Input			Normal Duty		Heavy Duty		Catalog Number	
Cont.	1 Min.	3 Sec.	Cont.	1 Min.	3 Sec.	kW	HP	kW	HP	20A...	
52	60	80	56	64.5	86	30	40	22	30	D052G3AYNANC0	E
65	78	104	72	84	112	37	50	30	40	D065G3AYNANC0	E

Product Selection Guide

PowerFlex 70 Drives — Flange Mount ① - Front Chassis = IP 20, NEMA Type 1; Heatsink = IP 66, NEMA Type 4X/12

200-240V AC, Three-Phase Drives (For pricing information, refer to the PowerFlex 70 Price List, Publication 20A-PL001...)

Output Amps						Nominal Power Ratings				Flange Type with HIM	Frame Size
240V AC Input ②			208V AC Input			Normal Duty		Heavy Duty		Catalog Number 20A...	
Cont.	1 Min.	3 Sec.	Cont.	1 Min.	3 Sec.	kW	HP	kW	HP		
2.2	2.4	3.3	2.5	2.7	3.7	0.37	0.5	0.25	0.33	B2P2F3AYNNNC0	A
4.2	4.8	6.4	4.8	5.5	7.4	0.75	1	0.55	0.75	B4P2F3AYNNNC0	A
6.8	9	12	7.8	10.3	13.8	1.5	2	1.1	1.5	B6P8F3AYNNNC0	B
9.6	10.6	14.4	11	12.1	16.5	2.2	3	1.5	2	B9P6F3AYNNNC0	B
15.3	17.4	23.2	17.5	19.2	26.2	4	5	3	3	B015F3AYNANC0	C
22	24.2	33	25.3	27.8	37.9	5.5	7.5	4	5	B022F3AYNANC0	D
28	33	44	32.2	37.9	50.6	7.5	10	5.5	7.5	B028F3AYNANC0	D

380-480V AC, Three-Phase Drives (For pricing information, refer to the PowerFlex 70 Price List, Publication 20A-PL001...)

Output Amps						Nominal Power Ratings				Flange Type with HIM	Frame Size
480V AC Input ②			380-400V AC Input			Normal Duty		Heavy Duty		Catalog Number 20A...	
Cont.	1 Min.	3 Sec.	Cont.	1 Min.	3 Sec.	kW	HP	kW	HP		
1.1	1.2	1.6	1.3	1.4	1.9	0.37	0.5	0.25	0.33	D1P1F3AYNNNC0	A
2.1	2.4	3.2	2.1	2.4	3.2	0.75	1	0.55	0.75	D2P1F3AYNNNC0	A
3.4	4.5	6	3.5	4.5	6	1.5	2	1.1	1.5	D3P4F3AYNNNC0	A
5	5.5	7.5	5	5.5	7.5	2.2	3	1.5	2	D5P0F3AYNNNC0	B
8	8.8	12	8.7	9.9	13.2	4	5	3	3	D8P0F3AYNNNC0	B
11	12.1	16.5	11.5	13	17.4	5.5	7.5	4	5	D011F3AYNANC0	C
14	16.5	22	15.4	17.2	23.1	7.5	10	5.5	7.5	D014F3AYNANC0	C
22	24.2	33	22	24.2	33	11	15	7.5	10	D022F3AYNANC0	D
27	33	44	30	33	45	15	20	11	15	D027F3AYNANC0	D
34	40.5	54	37	45	60	18.5	25	15	20	D034F3AYNANC0	D
40	51	68	43	56	74	22	30	18.5	25	D040F3AYNANC0	D
52	60	80	56	64.5	86	30	40	22	30	D052F3AYNANC0	E
65	78	104	72	84	112	37	50	30	40	D065F3AYNANC0	E

500-600V AC, Three-Phase Drives (For pricing information, refer to the PowerFlex 70 Price List, Publication 20A-PL001...)

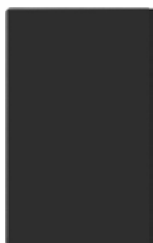
Output Amps			Nominal Power Ratings				Flange Type with HIM	Frame Size
600V AC Input			Normal Duty		Heavy Duty		Catalog Number 20A...	
Cont.	1 Min.	3 Sec.	kW	HP	kW	HP		
0.9	1	1.4	0.37	0.5	0.25	0.33	E0P9F3AYNNNC0	A
1.7	1.9	2.6	0.75	1	0.55	0.75	E1P7F3AYNNNC0	A
2.7	3.6	4.8	1.5	2	1.1	1	E2P7F3AYNNNC0	A
3.9	4.3	5.8	2.2	3	1.5	1.5	E3P9F3AYNNNC0	B
6.1	6.7	9.1	4	5	3	3	E6P1F3AYNNNC0	B
9	9.9	13.5	5.5	7.5	4	5	E9P0F3AYNNNC0	C
11	13.5	18	7.5	10	5.5	7.5	E011F3AYNNNC0	C
17	18.7	25.5	11	15	7.5	10	E017F3AYNNNC0	D
22	25.5	34	15	20	11	15	E022F3AYNNNC0	D

① Provides a method for heatsink to be external to customer enclosure. Front chassis = IP20, NEMA Type 1; Rear Heatsink = IP66 UL Type 4X/12 for indoor/outdoor use.

② Catalog code corresponds to output amps in these columns. Drive must be programmed to lower voltage to obtain higher currents shown at right.

Product Selection Guide

Accessories



HIM (Blank Plate)
20-HIM-A0
Cat Code: 0



LCD Digital Speed
20-HIM-A2
Cat Code: 2



LCD Full Numeric
20-HIM-A3
Cat Code: 3



LCD Analog Speed
20-HIM-A4
Cat Code: 4



LCD Programmer Only
20-HIM-A5
Cat Code: 5



Remote (Panel Mount)
Full Numeric
20-HIM-C3



20-HIM-C3S



Remote (Panel Mount)
Programmer Only
20-HIM-C5



20-HIM-C5S

Human Interface Modules (HIM) Option Kits

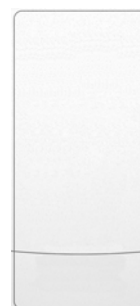
	Catalog Number	
Handheld/Local (Drive Mount) Type ①	User Installed	Factory Installed (position 9)
Blank Plate ②	20-HIM-A0	0
LCD Display, Digital Speed	20-HIM-A2	2
LCD Display, Full Numeric Keypad ②	20-HIM-A3	3
LCD Display, Analog Speed Potentiometer	20-HIM-A4	4
LCD Display, Programmer Only ②	20-HIM-A5	5
Remote (Panel Mount) IP 66, UL Type 4x/12 ③		
LCD Display, Full Numeric Keypad	20-HIM-C3 ④	—
LCD Display, Programmer Only	20-HIM-C5 ④	—

① Mounts to either IP20, NEMA Type 1 or Flange Type.

② Available only as factory installed for IP66, NEMA Type 4X/12 and IP54, NEMA Type 12 drives.

③ For indoor use only.

④ Includes a 1 meter PowerFlex HIM Interface Cable (20-HIM-H10).



LCD NEMA 4X/12 ②
No HIM (Blank)
Cat Code: 0



LCD NEMA 4X/12 ②
Full Numeric
Cat Code: 3



LCD NEMA 4X/12 ②
Programmer Only
Cat Code: 5

Human Interface Module Interface Cables

Description	Catalog No.
PowerFlex HIM Interface Cable, 1 m (39 in.) ⑤	20-HIM-H10
Cable Kit (Male-Female) ⑥	
0.33 Meters (1.1 Feet)	1202-H03
1 Meter (3.3 Feet)	1202-H10
3 Meter (9.8 Feet)	1202-H30
9 Meter (29.5 Feet)	1202-H90
DPI/SCANport™ One to Two Port Splitter Cable	1203-S03

⑤ Required only when HIM is used as handheld or remotely mounted.

⑥ Required in addition to 20-HIM-H10 for distances up to 10 Meters (32.8 Feet) maximum.

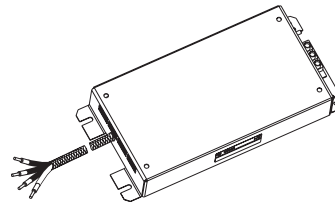
Product Selection Guide

Accessories, Continued

EMC Filters

Description	Frame	Catalog Number	
		User Installed	Factory Installed (Position 13)
External 1-Phase 200-240V, 8A Filter	A	20A-RF-08-A1	N/A
External 3-Phase 200-480V, 5A Filter	A	20A-RF-05-A3	N/A
Internal 3-Phase 200-480 Filter ^❶	B, C, D	—	A

❶ Standard on Frames C and D. Optional on Frame B (Frame A ratings increase to Frame B).



EMC Filter
20A-RF-08-A1
20A-RF-05-A3

Communication Options

Description	Catalog No. User Installed	Factory Installed (Position 14)
ControlNet Communication Adapter	20-COMM-C	C
DeviceNet Communication Adapter	20-COMM-D	D
EtherNet/IP Communication Adapter	20-COMM-E	E
RS485 HVAC Communication Adapter (Modbus RTU, Metasys N2, Siemens P1)	20-COMM-H	H
Remote I/O Communication Adapter	20-COMM-R	R
RS485 DF-1 Communication Adapter	20-COMM-S	S
Profibus Communication Adapter	20-COMM-P	N/A
Interbus Communication Adapter	20-COMM-I	N/A
LonWorks Communication Adapter	20-COMM-L	N/A
Smart Self-powered Serial Converter (RS-232) includes 1203-SFC and 1202-C10 Cables	1203-SSS	N/A
Serial Null Modem Adapter	1203-SNM	N/A



Communication
Adapter
20-COMM-D2

Other Options

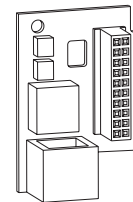
Description	Catalog No.	
	User Installed	Factory Installed (Position 15)
DriveGuard™ Safe-Off Board ^❷	20A-DG01	G
Service Connection Board ^❸	SK-M9-SCB1	N/A

❷ Works only with PowerFlex 70 Enhanced Control.

❸ Provides temporary DPI/HIM connection for NEMA 1 and Flange drives with cover removed.



DriveGuard™ Safe-Off Option
20A-DG01
Cat Code: G



Service Connection Board
SK-M9-SCB1

Product Selection Guide

Accessories, Continued

Dynamic Brake Resistors

Application requirements should be thoroughly evaluated to determine what size (and thus type) will be sufficient. Publication PFLEX-AT001..., *Dynamic Braking Resistor Calculator*, provides a method based on application data such as load inertia.

Small Duty Internal DB Resistors

Limited duty resistors mount directly to the back surface of the drive and require no extra panel space. Internal resistors are non-destructive and do not require a resistor overheat external safety circuit.

PowerFlex 70 AC Drive			Small Duty Internal DB Resistor								
Normal Duty kW (HP)	Heavy Duty kW (HP)	Min DB Res Ohms ±10%	Part Number	Resistance Ohms ±5%	Continuos Power kW	Max Energy kJ	Max Braking Torque % of ND Motor	Application Type 1		Application Type 2	
								Braking Torque % of ND Motor	Duty Cycle	Braking Torque % of ND Motor	Duty Cycle
200-240 Volt AC Input Drives											
0.37 (0.5)	0.25 (0.33)	33	20AB-DB1-A	62	0.048	8.3	307%	100%	25.9%	150%	17.3%
0.75 (1)	0.55 (0.75)	33	20AB-DB1-A	62	0.048	7.3	300%	100%	12.8%	150%	8.5%
1.5 (2)	1.1 (1.5)	33	20AB-DB1-B	62	0.028	0.8	160%	100%	3.7%	150%	2.5%
2.2 (3)	1.5 (2)	33	20AB-DB1-B	62	0.028	0.8	109%	100%	2.5%	109%	2.3%
4 (5)	3 (3)	30	20AB-DB1-C	62	0.040	0.8	60%	60%	3.3%	N/A	N/A
5.5 (7.5)	4 (5)	23	20AB-DB1-D	22	0.036	0.9	117%	100%	1.3%	117%	1.1%
7.5 (10)	5.5 (7.5)	23	20AB-DB1-D	22	0.036	0.9	86%	86%	1.1%	N/A	N/A
400-480 Volt AC Input Drives											
0.37 (0.5)	0.25 (0.33)	68	20AD-DB1-A	115	0.048	8.3	320%	100%	25.9%	150%	17.3%
0.75 (1)	0.55 (0.75)	68	20AD-DB1-A	115	0.048	9.0	259%	100%	12.8%	150%	8.5%
1.5 (2)	1.1 (1.5)	68	20AD-DB1-A	115	0.048	2.4	243%	100%	6.4%	150%	4.3%
2.2 (3)	1.5 (2)	68	20AD-DB1-B	115	0.028	0.9	206%	100%	2.5%	150%	1.7%
4 (5)	3 (3)	68	20AD-DB1-B	115	0.028	0.9	129%	100%	1.4%	129%	1.1%
5.5 (7.5)	4 (5)	74	20AD-DB1-C	115	0.04	0.9	94%	94%	1.5%	N/A	N/A
7.5 (10)	5.5 (7.5)	74	20AD-DB1-C	115	0.04	0.9	69%	69%	1.5%	N/A	N/A
11 (15)	7.5 (10)	44	20AD-DB1-D	62	0.036	0.8	87%	87%	0.8%	N/A	N/A
15 (20)	11 (15)	31	20AD-DB1-D	62	0.036	0.8	64%	64%	0.8%	N/A	N/A
500-600 Volt AC Input Drives											
0.37 (0.5)	0.25 (0.33)	117	20AD-DB1-A	115	0.048	8.3	287%	100%	25.9%	150%	17.3%
0.75 (1)	0.55 (0.75)	117	20AD-DB1-A	115	0.048	9.0	263%	100%	12.8%	150%	8.5%
1.5 (2)	1.1 (1.5)	117	20AD-DB1-A	115	0.048	2.4	243%	100%	6.4%	150%	4.3%
2.2 (3)	1.5 (2)	117	20AD-DB1-B	115	0.028	0.9	202%	100%	2.5%	150%	1.7%
4 (5)	3 (3)	80	20AD-DB1-B	115	0.028	0.9	193%	100%	1.4%	150%	0.9%
5.5 (7.5)	4 (5)	80	20AD-DB1-C	115	0.04	0.9	147%	100%	1.5%	147%	1.0%
7.5 (10)	5.5 (7.5)	80	20AD-DB1-C	115	0.04	0.9	108%	100%	1.1%	108%	1.0%
11 (15)	7.5 (10)	48	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15 (20)	11 (15)	48	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Medium Duty External DB Resistors

These resistors provide a larger duty cycle capability than the internal type. Includes an internal thermal switch for use in external safety circuit.

PowerFlex 70 AC Drive			Medium Duty External DB Resistor								
Normal Duty kW (HP)	Heavy Duty kW (HP)	Min DB Res Ohms ±10%	Part Number	Resistance Ohms ±5%	Continuos Power kW	Max Energy kJ	Max Braking Torque % of ND Motor	Application Type 1		Application Type 2	
								Braking Torque % of ND Motor	Duty Cycle	Braking Torque % of ND Motor	Duty Cycle
200-240 Volt AC Input Drives											
0.37 (0.5)	0.25 (0.33)	33	AK-R2-091P500	91	0.086	17	293%	100%	46%	150%	31%
0.75 (1)	0.55 (0.75)	33	AK-R2-091P500	91	0.086	17	218%	100%	23%	150%	15%
1.5 (2)	1.1 (1.5)	33	AK-R2-091P500	91	0.086	17	109%	100%	11%	109%	11%
2.2 (3)	1.5 (2)	33	AK-R2-047P500	47	0.166	33	144%	100%	15%	144%	11%
4 (5)	3 (3)	30	AK-R2-047P500	47	0.166	33	79%	79%	11%	N/A	N/A
5.5 (7.5)	4 (5)	23	AK-R2-030P1K2	30	0.26	52	90%	90%	10%	N/A	N/A
7.5 (10)	5.5 (7.5)	23	AK-R2-030P1K2	30	0.26	52	66%	66%	10%	N/A	N/A
400-480 Volt AC Input Drives											
0.37 (0.5)	0.25 (0.33)	68	AK-R2-360P500	360	0.086	17	305%	100%	47%	150%	31%
0.75 (1)	0.55 (0.75)	68	AK-R2-360P500	360	0.086	17	220%	100%	23%	150%	15%
1.5 (2)	1.1 (1.5)	68	AK-R2-360P500	360	0.086	17	110%	100%	12%	110%	11%
2.2 (3)	1.5 (2)	68	AK-R2-120P1K2	120	0.26	52	197%	100%	24%	150%	16%
4 (5)	3 (3)	68	AK-R2-120P1K2	120	0.26	52	124%	100%	13%	124%	10%
5.5 (7.5)	4 (5)	74	AK-R2-120P1K2	120	0.26	52	90%	90%	10%	N/A	N/A
7.5 (10)	5.5 (7.5)	74	AK-R2-120P1K2	120	0.26	52	66%	66%	10%	N/A	N/A
11 (15)	7.5 (10)	44	See Note 3	60	0.52	104	90%	90%	10%	N/A	N/A
15 (20)	11 (15)	31	See Note 3	60	0.52	104	66%	66%	10%	N/A	N/A
500-600 Volt AC Input Drives											
0.37 (0.5)	0.25 (0.33)	117	AK-R2-360P500	360	0.086	17	274%	100%	46%	150%	31%
0.75 (1)	0.55 (0.75)	117	AK-R2-360P500	360	0.086	17	251%	100%	23%	150%	15%
1.5 (2)	1.1 (1.5)	117	AK-R2-360P500	360	0.086	17	172%	100%	11%	150%	8%
2.2 (3)	1.5 (2)	117	AK-R2-120P1K2	120	0.26	52	193%	100%	24%	150%	16%
4 (5)	3 (3)	80	AK-R2-120P1K2	120	0.26	52	185%	100%	13%	150%	9%
5.5 (7.5)	4 (5)	80	AK-R2-120P1K2	120	0.26	52	141%	100%	9%	141%	7%
7.5 (10)	5.5 (7.5)	80	AK-R2-120P1K2	120	0.26	52	103%	100%	7%	103%	7%
11 (15)	7.5 (10)	48	See Note 3	60	0.52	104	141%	100%	9%	141%	7%
15 (20)	11 (15)	48	See Note 3	60	0.52	104	103%	100%	7%	103%	7%

Note 1: Always check resistor ohms against minimum resistance for drive being used.

Note 2: Duty cycle listed is based on full speed to zero speed deceleration.

For constant regen at full speed, duty cycle capability is half of what is listed.

Application Type 1 represents maximum capability up to 100% braking torque where possible.

Application Type 2 represents more than 100% braking torque where possible, up to a maximum of 150%.

Note 3: For 11 and 15 kW (15 and 20 HP) applications, use two 7.5 kW (10 HP) size resistors wired in parallel.

Product Selection Guide

Accessories, Continued

Input and Output Line Reactors – 240V, 60 Hz, Three-Phase

Drive Catalog Number	Duty	HP	Input Line Reactor❶		Output Line Reactor❶	
			IP 00 (Open Style)	IP 11 (Nema Type 1)	IP 00 (Open Style)	IP 11 (Nema Type 1)
			Catalog Number	Catalog Number	Catalog Number	Catalog Number
3% Impedance – 240V, 60 Hz, Three-Phase						
20AB2P2	Heavy Duty	0.33	1321-3R2-D	1321-3RA2-D	1321-3R2-D	1321-3RA2-D
20AB2P2	Normal Duty	0.5	1321-3R2-D	1321-3RA2-D	1321-3R2-D	1321-3RA2-D
20AB4P2	Heavy Duty	0.75	1321-3R4-A	1321-3RA4-A	1321-3R4-A	1321-3RA4-A
20AB4P2	Normal Duty	1	1321-3R4-A	1321-3RA4-A	1321-3R4-A	1321-3RA4-A
20AB6P8	Heavy Duty	1.5	1321-3R8-A	1321-3RA8-A	1321-3R8-A	1321-3RA8-A
20AB6P8	Normal Duty	2	1321-3R8-A	1321-3RA8-A	1321-3R8-A	1321-3RA8-A
20AB9P6	Heavy Duty	2	1321-3R8-A	1321-3RA8-A	1321-3R12-A	1321-3RA12-A
20AB9P6	Normal Duty	3	1321-3R12-A	1321-3RA12-A	1321-3R12-A	1321-3RA12-A
20AB015	Heavy Duty	3	1321-3R12-A	1321-3RA12-A	1321-3R18-A	1321-3RA18-A
20AB015	Normal Duty	5	1321-3R18-A	1321-3RA18-A	1321-3R18-A	1321-3RA18-A
20AB022	Heavy Duty	5	1321-3R18-A	1321-3RA18-A	1321-3R25-A	1321-3RA25-A
20AB022	Normal Duty	7.5	1321-3R25-A	1321-3RA25-A	1321-3R25-A	1321-3RA25-A
20AB028	Heavy Duty	7.5	1321-3R25-A	1321-3RA25-A	1321-3R35-A	1321-3RA35-A
20AB028	Normal Duty	10	1321-3R35-A	1321-3RA35-A	1321-3R35-A	1321-3RA35-A
5% Impedance – 240V, 60 Hz, Three-Phase						
20AB2P2	Heavy Duty	0.33	1321-3R2-A	1321-3RA2-A	1321-3R2-A	1321-3RA2-A
20AB2P2	Normal Duty	0.5	1321-3R2-A	1321-3RA2-A	1321-3R2-A	1321-3RA2-A
20AB4P2	Heavy Duty	0.75	1321-3R4-B	1321-3RA4-B	1321-3R4-B	1321-3RA4-B
20AB4P2	Normal Duty	1	1321-3R4-B	1321-3RA4-B	1321-3R4-B	1321-3RA4-B
20AB6P8	Heavy Duty	1.5	1321-3R8-B	1321-3RA8-B	1321-3R8-B	1321-3RA8-B
20AB6P8	Normal Duty	2	1321-3R8-B	1321-3RA8-B	1321-3R8-B	1321-3RA8-B
20AB9P6	Heavy Duty	2	1321-3R8-B	1321-3RA8-B	1321-3R12-B	1321-3RA12-B
20AB9P6	Normal Duty	3	1321-3R12-B	1321-3RA12-B	1321-3R12-B	1321-3RA12-B
20AB015	Heavy Duty	3	1321-3R12-B	1321-3RA12-B	1321-3R18-B	1321-3RA18-B
20AB015	Normal Duty	5	1321-3R18-B	1321-3RA18-B	1321-3R18-B	1321-3RA18-B
20AB022	Heavy Duty	5	1321-3R18-B	1321-3RA18-B	1321-3R25-B	1321-3RA25-B
20AB022	Normal Duty	7.5	1321-3R25-B	1321-3RA25-B	1321-3R25-B	1321-3RA25-B
20AB028	Heavy Duty	7.5	1321-3R25-B	1321-3RA25-B	1321-3R35-B	1321-3RA35-B
20AB028	Normal Duty	10	1321-3R35-B	1321-3RA35-B	1321-3R35-B	1321-3RA35-B

❶ Input line reactors were sized based on the NEC fundamental motor amps. Output line reactors were sized based on the VFD rated output currents.

Product Selection Guide

Accessories, Continued

Input and Output Line Reactors – 480V, 60 Hz, Three-Phase

Drive Catalog Number	Duty	HP	Input Line Reactor ❶		Output Line Reactor ❶	
			IP 00 (Open Style)	IP 11 (Nema Type 1)	IP 00 (Open Style)	IP 11 (Nema Type 1)
			Catalog Number	Catalog Number	Catalog Number	Catalog Number
3% Impedance – 480V, 60 Hz, Three-Phase						
20AD1P1	Heavy Duty	0.33	1321-3R1-C	1321-3RA1-C	1321-3R2-B	1321-3RA2-B
20AD1P1	Normal Duty	0.5	1321-3R1-C	1321-3RA1-C	1321-3R2-B	1321-3RA2-B
20AD2P1	Heavy Duty	0.75	1321-3R2-A	1321-3RA2-A	1321-3R2-A	1321-3RA2-A
20AD2P1	Normal Duty	1	1321-3R2-A	1321-3RA2-A	1321-3R2-A	1321-3RA2-A
20AD3P4	Heavy Duty	1.5	1321-3R4-C	1321-3RA4-C	1321-3R4-B	1321-3RA4-B
20AD3P4	Normal Duty	2	1321-3R4-B	1321-3RA4-B	1321-3R4-B	1321-3RA4-B
20AD5P0	Heavy Duty	2	1321-3R4-B	1321-3RA4-B	1321-3R8-C	1321-3RA8-C
20AD5P0	Normal Duty	3	1321-3R4-B	1321-3RA4-B	1321-3R8-C	1321-3RA8-C
20AD8P0	Heavy Duty	3	1321-3R4-B	1321-3RA4-B	1321-3R8-B	1321-3RA8-B
20AD8P0	Normal Duty	5	1321-3R8-B	1321-3RA8-B	1321-3R8-B	1321-3RA8-B
20AD011	Heavy Duty	5	1321-3R8-B	1321-3RA8-B	1321-3R12-B	1321-3RA12-B
20AD011	Normal Duty	7.5	1321-3R12-B	1321-3RA12-B	1321-3R12-B	1321-3RA12-B
20AD014	Heavy Duty	7.5	1321-3R12-B	1321-3RA12-B	1321-3R18-B	1321-3RA18-B
20AD014	Normal Duty	10	1321-3R18-B	1321-3RA18-B	1321-3R18-B	1321-3RA18-B
20AD022	Heavy Duty	10	1321-3R18-B	1321-3RA18-B	1321-3R25-B	1321-3RA25-B
20AD022	Normal Duty	15	1321-3R25-B	1321-3RA25-B	1321-3R25-B	1321-3RA25-B
20AD027	Heavy Duty	15	1321-3R25-B	1321-3RA25-B	1321-3R35-B	1321-3RA35-B
20AD027	Normal Duty	20	1321-3R35-B	1321-3RA35-B	1321-3R35-B	1321-3RA35-B
20AD034	Heavy Duty	20	1321-3R35-B	1321-3RA35-B	1321-3R45-B	1321-3RA45-B
20AD034	Normal Duty	25	1321-3R35-B	1321-3RA35-B	1321-3R45-B	1321-3RA45-B
20AD040	Heavy Duty	25	1321-3R35-B	1321-3RA35-B	1321-3R55-B	1321-3RA55-B
20AD040	Normal Duty	30	1321-3R45-B	1321-3RA45-B	1321-3R55-B	1321-3RA55-B
20AD052	Heavy Duty	30	1321-3R45-B	1321-3RA45-B	1321-3R80-B	1321-3RA80-B
20AD052	Normal Duty	40	1321-3R55-B	1321-3RA55-B	1321-3R80-B	1321-3RA80-B
20AD065	Heavy Duty	40	1321-3R55-B	1321-3RA55-B	1321-3R80-B	1321-3RA80-B
20AD065	Normal Duty	50	1321-3R55-B	1321-3RA55-B	1321-3R80-B	1321-3RA80-B
5% Impedance – 480V, 60 Hz, Three-Phase						
20AD1P1	Heavy Duty	0.33	1321-3R1-B	1321-3RA1-B	1321-3R2-B	1321-3RA2-B
20AD1P1	Normal Duty	0.5	1321-3R1-B	1321-3RA1-B	1321-3R2-B	1321-3RA2-B
20AD2P1	Heavy Duty	0.75	1321-3R2-B	1321-3RA2-B	1321-3R2-B	1321-3RA2-B
20AD2P1	Normal Duty	1	1321-3R2-B	1321-3RA2-B	1321-3R2-B	1321-3RA2-B
20AD3P4	Heavy Duty	1.5	1321-3R4-D	1321-3RA4-D	1321-3R4-C	1321-3RA4-C
20AD3P4	Normal Duty	2	1321-3R4-D	1321-3RA4-D	1321-3R4-C	1321-3RA4-C
20AD5P0	Heavy Duty	2	1321-3R4-C	1321-3RA4-C	1321-3R8-D	1321-3RA8-D
20AD5P0	Normal Duty	3	1321-3R4-C	1321-3RA4-C	1321-3R8-D	1321-3RA8-D
20AD8P0	Heavy Duty	3	1321-3R4-C	1321-3RA4-C	1321-3R8-C	1321-3RA8-C
20AD8P0	Normal Duty	5	1321-3R8-C	1321-3RA8-C	1321-3R8-C	1321-3RA8-C
20AD011	Heavy Duty	5	1321-3R8-C	1321-3RA8-C	1321-3R12-C	1321-3RA12-C
20AD011	Normal Duty	7.5	1321-3R12-C	1321-3RA12-C	1321-3R12-C	1321-3RA12-C
20AD014	Heavy Duty	7.5	1321-3R12-C	1321-3RA12-C	1321-3R18-C	1321-3RA18-C
20AD014	Normal Duty	10	1321-3R18-C	1321-3RA18-C	1321-3R18-C	1321-3RA18-C
20AD022	Heavy Duty	10	1321-3R18-C	1321-3RA18-C	1321-3R25-C	1321-3RA25-C
20AD022	Normal Duty	15	1321-3R25-C	1321-3RA25-C	1321-3R25-C	1321-3RA25-C
20AD027	Heavy Duty	15	1321-3R25-C	1321-3RA25-C	1321-3R35-C	1321-3RA35-C
20AD027	Normal Duty	20	1321-3R35-C	1321-3RA35-C	1321-3R35-C	1321-3RA35-C
20AD034	Heavy Duty	20	1321-3R35-C	1321-3RA35-C	1321-3R45-C	1321-3RA45-C
20AD034	Normal Duty	25	1321-3R35-C	1321-3RA35-C	1321-3R45-C	1321-3RA45-C
20AD040	Heavy Duty	25	1321-3R35-C	1321-3RA35-C	1321-3R55-C	1321-3RA55-C
20AD040	Normal Duty	30	1321-3R45-C	1321-3RA45-C	1321-3R55-C	1321-3RA55-C
20AD052	Heavy Duty	30	1321-3R45-C	1321-3RA45-C	1321-3R80-C	1321-3RA80-C
20AD052	Normal Duty	40	1321-3R55-C	1321-3RA55-C	1321-3R80-C	1321-3RA80-C
20AD065	Heavy Duty	40	1321-3R55-C	1321-3RA55-C	1321-3R80-C	1321-3RA80-C
20AD065	Normal Duty	50	1321-3R55-C	1321-3RA55-C	1321-3R80-C	1321-3RA80-C

❶ Input line reactors were sized based on the NEC fundamental motor amps. Output line reactors were sized based on the VFD rated output currents.

Packaged Drives Program

Packaged Drives Overview

The PowerFlex 70 Packaged Drives Program allows users to create drive packages based on their specific needs. This program enhances stand-alone drive functionality through additional control, power and packaging options which are ideal for OEM and end users with special installation needs.

The program has three levels:

- Quick Ship
- Standard Packaged Drives
- Engineered Drives.

Quick Ship products are intended to meet faster than normal delivery requirements. Pre-defined catalog strings are offered to support shipping one to three business days from date of order entry. The current offering is based on NEMA 1 (IP20) and NEMA 4/12 (IP65), 480V, top of frame ratings (frame A-D). These packages are a subset of the Standard Packaged Drives Program noted below and can be ordered through the order entry system. *This program uses the Standard Control version of the PowerFlex 70.*

The **Standard Packaged Drives** Program allows users to create drive packages based on their specific needs. A complete drive package may be specified by assembling a single catalog number string that includes a base drive and all required options. Packaging is available for 208V, 240V, 480V and 600V requirements in NEMA Type 1 (IP20), NEMA 4/12 (IP65) indoor, and NEMA 3/4 (IP65) outdoor. The program consists of a fully defined catalog string identified within the price sheet. Focused on higher volume, repeat business, the standard designs provide consistent manufacturing and minimizes customer resources by reducing engineering, manufacturing and installation time. Typical delivery is 10 business days from order entry and can be ordered through the order entry system. *This program uses the Standard Control version of the PowerFlex 70.*

The **Engineered Drives Program** offers users the ability to create drive packages beyond the Standard Packaged Drives offering. *This program supports both the Standard and the Enhanced Control versions of the PowerFlex 70.* Options may or may not be defined within this publication. Product can be ordered by:

1. Assembling a catalog string from the options listed in this publication.
Engineered options that are listed within this publication will be specified by the heading “*Engineered Drives Program Only*” and will have varied lead-times.
2. Entering a custom quote request for additional options not listed.
A custom quote will require a Passport quote using “SP-SDB-CUSTOM” as the line item part number and entering a description of the base catalog string and custom options in the Competitive Summary. For questions or help with a custom quote please contact the Engineered Drives Group at 262-512-8415.

Packaged Drives Program

Quick Ship Program ❶

The Quick Ship Program order entry system has been simplified, minimizing the time required to place an order. To enter your order, type in the first 14 characters of the string and the system will complete the rest.

Program Features

- 480V top of frame NEMA type 1 or NEMA Type 4/12 packages
- Pre-determined catalog numbers
- Delivery within 1 to 3 business days of order entry

Standard Features

- Four different 480V PowerFlex 70 flange mount drives [21AQD]
- NEMA Type 1 (IP 20) [-AA] or NEMA Type 4/12 (IP 65) indoor enclosure [-AF]
- Full Numeric LCD HIM, door mounted [-C3]
- Circuit Breaker [-CB] or Fuse Disconnect [-DS]
- 115V AC Control Power Transformer [-CF]
- Hand/Off/Auto Selector Switch [-D1A]
- Drive Run Pilot Light [-D2A]
- Drive Fault Pilot Light [-D2B]
- Control Power On Pilot Light [-D3A]
- Drive Fault Control Relay [-JF]
- Drive Run Control Relay [-JR]



Quick Ship Catalog Entry

Frame	Normal Duty HP	Heavy Duty HP	Type in Catalog Number	Name Plated Catalog Number❷	Dimensions (in inches)	Approx. Weight (in lbs.)
IP20, NEMA Type 1						
A	2	1.5	21AQD3P4-AA-DS	21AQD3P4-AA-DS-C3-CF-D1A-D2A-D2B-D3A-JF-JR	32h x 24w x 16d	225
B	5	3	21AQD8P0-AA-DS	21AQD8P0-AA-DS-C3-CF-D1A-D2A-D2B-D3A-JF-JR	32h x 24w x 16d	225
C	10	7.5	21AQD014-AA-DS	21AQD014-AA-DS-C3-CF-D1A-D2A-D2B-D3A-JF-JR	32h x 24w x 16d	235
D	20	15	21AQD027-AA-DS	21AQD027-AA-DS-C3-CF-D1A-D2A-D2B-D3A-JF-JR	38h x 24w x 16d	250
A	2	1.5	21AQD3P4-AA-CB	21AQD3P4-AA-CB-C3-CF-D1A-D2A-D2B-D3A-JF-JR	32h x 24w x 16d	225
B	5	3	21AQD8P0-AA-CB	21AQD8P0-AA-CB-C3-CF-D1A-D2A-D2B-D3A-JF-JR	32h x 24w x 16d	225
C	10	7.5	21AQD014-AA-CB	21AQD014-AA-CB-C3-CF-D1A-D2A-D2B-D3A-JF-JR	32h x 24w x 16d	235
D	20	15	21AQD027-AA-CB	21AQD027-AA-CB-C3-CF-D1A-D2A-D2B-D3A-JF-JR	38h x 24w x 16d	250
IP65, NEMA Type 4/12						
A	2	1.5	21AQD3P4-AF-DS	21AQD3P4-AF-DS-C3-CF-D1A-D2A-D2B-D3A-JF-JR	32h x 24w x 16d	225
B	5	3	21AQD8P0-AF-DS	21AQD8P0-AF-DS-C3-CF-D1A-D2A-D2B-D3A-JF-JR	32h x 24w x 16d	225
C	10	7.5	21AQD014-AF-DS	21AQD014-AF-DS-C3-CF-D1A-D2A-D2B-D3A-JF-JR	32h x 24w x 16d	235
D	20	15	21AQD027-AF-DS	21AQD027-AF-DS-C3-CF-D1A-D2A-D2B-D3A-JF-JR	38h x 24w x 16d	250
A	2	1.5	21AQD3P4-AF-CB	21AQD3P4-AF-CB-C3-CF-D1A-D2A-D2B-D3A-JF-JR	32h x 24w x 16d	225
B	5	3	21AQD8P0-AF-CB	21AQD8P0-AF-CB-C3-CF-D1A-D2A-D2B-D3A-JF-JR	32h x 24w x 16d	225
C	10	7.5	21AQD014-AF-CB	21AQD014-AF-CB-C3-CF-D1A-D2A-D2B-D3A-JF-JR	32h x 24w x 16d	235
D	20	15	21AQD027-AF-CB	21AQD027-AF-CB-C3-CF-D1A-D2A-D2B-D3A-JF-JR	38h x 24w x 16d	250

❶ This program uses the Standard Control version of the PowerFlex 70.

❷ Consult factory for orders larger than one drive per frame size.

Packaged Drives Program

Standard Packaged Drives Program

NEMA Type 1

- Panel Mount Drive
- Modular Construction
- 208V/240V/480V/600V Ratings

NEMA Type 4/12 Indoor

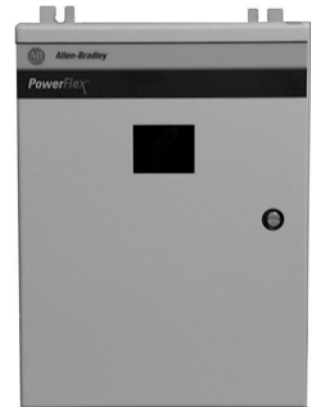
- Flange Mount Drive
- Welded Construction
- 208V/240V/480V/600V Ratings

NEMA Type 3/4 Outdoor

- Flange Mount Drive
- Welded Construction
- 208V/240V/480V/600V Ratings

All Enclosure Types

- Drive Input Protection Options
- Input/Output Contactors
- Bypass Options
- Input/Output Line Reactor Options
- 115V Control Power Options
- Control Interface and Feedback Options
- Human Interface Modules
- Motor Interface Options
- Operator Devices
- Drawing and Test Options

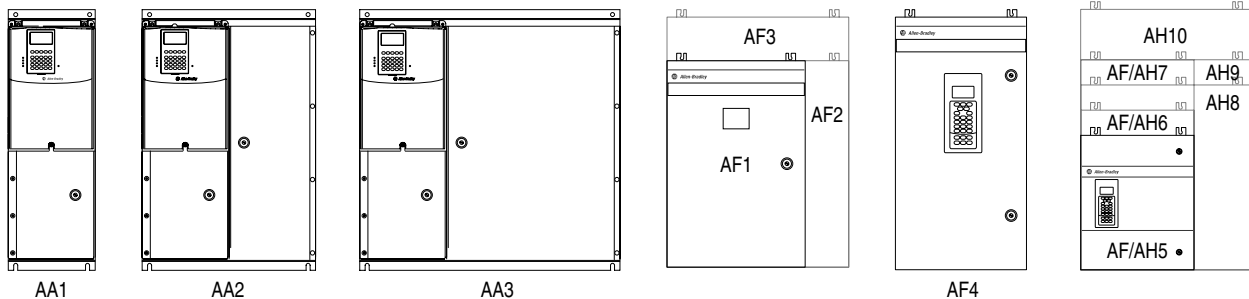


Description and Approximate Dimensions

Enclosure Rating	Code	Style	Dimensions millimeters (inches)			Description
			Height	Width	Depth	
NEMA Type 1 IP 20	AA1	1	667.8 (26.3)	220.7 (8.7)	293.1 (11.5)	Panel mount drive with drive input protection option.
	AA2	2	667.8 (26.3)	441.5 (17.4)	293.1 (11.5)	Panel mount drive with program options less line/load reactors.
	AA3	3	667.8 (26.3)	662.2 (26.1)	293.1 (11.5)	Panel mount drive with all program options.
NEMA Type 4/12 Indoor NEMA Type 3/4 Outdoor IP 65	AF	1	457.2 (18.0)	304.8 (12.0)	304.8 (12.0)	A and B frame flange mount drive with drive mounted options only.
	AF	2	457.2 (18.0)	406.4 (16.0)	304.8 (12.0)	C frame flange mount drive with drive mounted options only.
	AF	3	558.8 (22.0)	406.4 (16.0)	304.8 (12.0)	D frame flange mount drive with drive mounted options only.
	AF/AH	4	812.8 (32.0)	330.2 (13.0)	304.8 (12.0)	A-D frame flange mount drive with input protection option.
	AF/AH	5	812.8 (32.0)	609.6 (24.0)	406.4 (16.0)	Flange mount drives. Size varies with drive frame and option selection.
	AF/AH	6	965.2 (38.0)	609.6 (24.0)	406.4 (16.0)	
	AF/AH	7	1270.0 (50.0)	609.6 (24.0)	406.4 (16.0)	
	AH	8	1117.6 (44.0)	914.4 (36.0)	406.4 (16.0)	
	AH	9	1270.0 (50.0)	914.4 (36.0)	406.4 (16.0)	
	AH	10	1574.8 (62.0)	914.4 (36.0)	406.4 (16.0)	

See product Price List, publication 20A-PL001 for further detail.

The Allen-Bradley Standard Packaged Drives Program allows users to order Standard Packaged PowerFlex 70 drives that exceed the options offered with a standard drive product. Users can choose from an options list that includes control, power, packaging and documentation to meet unique application demands. The program provides different physical pre-engineered package sizes based upon environmental and option mounting requirements.



❶ This program uses the Standard Control version of the PowerFlex 70.

Installation Considerations

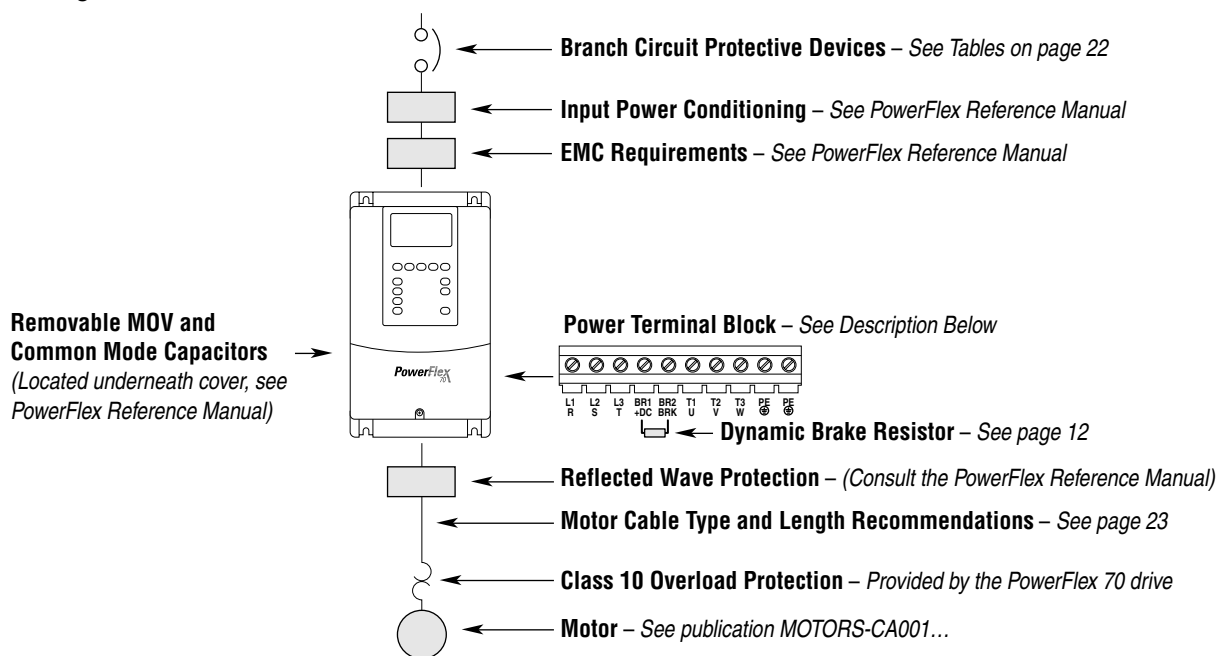
Power Wiring

The PowerFlex 70 has the following built in protective features to help simplify installation:

- Ground fault protection during start-up and running helps ensure reliability
- Electronic motor moverload protection increases motor life
- Removable MOV to ground and common mode capacitors to ground, ensures compatibility with ungrounded systems
- 6kV transient protection 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 Reference Manual*, Publication PFLEX-RM001..., available on-line at www.ab.com/manuals/dr, for detailed recommendations on input power conditioning, CE conformance (EMC filtering), dynamic braking, reflected wave protection, motor cables types and motor cable distances.

Block Diagram



Power Terminal Block

Terminal	Description	Notes
R	R (L1)	AC Line Input Power
S	S (L2)	AC Line Input Power
T	T (L3)	AC Line Input Power
BR1/+DC	DC Bus (+)	Dynamic Brake Resistor Connection (+)
BR2/BRK	DC Brake	Dynamic Brake Resistor Connection (–)
U	U (T1)	To Motor
V	V (T2)	To Motor
W	W (T3)	To Motor
PE	PE Ground	
PE	PE Ground	

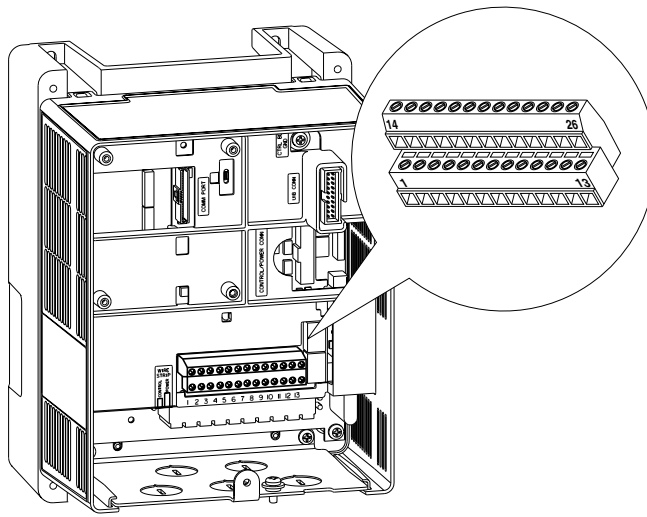
Power Wiring

Name	Frame	Wire Size Range ❶		Torque	
		Maximum	Minimum	Maximum	Recommended
Power Terminal Block	A, B, & C	3.5 mm ² (12 AWG)	0.3 mm ² (22 AWG)	0.66 N-m (5.5 lb.-in.)	0.6 N-m (5 lb.-in.)
	D	8.4 mm ² (8 AWG)	0.8 mm ² (18 AWG)	1.7 N-m (15 lb.-in.)	1.4 N-m (12 lb.-in.)
	E	25.0 mm ² (3 AWG)	2.5 mm ² (14 AWG)	2.71 N-m (24 lb.-in.)	2.71 N-m (24 lb.-in.)
SHLD terminal	All	—	—	1.6 N-m (14 lb.-in.)	1.6 N-m (14 lb.-in.)

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

Installation Considerations

Control Wiring



No.	Signal	Factory Default	Description	Related Param.
1	Digital In1 Sel	Stop – CF (CF = Clear Fault)	11.2 mA @ 24V DC 19.2V minimum on state 3.2V maximum off state Important: Use only 24V DC, not suitable for 115V AC circuitry. Inputs can be wired as sink or source.	361 - 366
2	Digital In2 Sel	Start		
3	Digital In3 Sel	Auto/Man		
4	Digital In4 Sel	Speed Sel 1		
5	Digital In5 Sel	Speed Sel 2		
6	Digital In6 Sel	Speed Sel 3		
7	24V Common	–	Drive supplied power for Digital In1-6 inputs. 150mA maximum load.	
8	Digital In Common	–		
9	+24V DC	–		
10	+10V Pot Reference	–	2 k ohm minimum load.	
11	Digital Out 1 – N.O. ❶	NOT Fault	<u>Max Resistive Load</u> 250V AC / 30V DC 50 VA / 60 Watts <u>Max Inductive Load</u> 250V AC / 30V DC 25 VA / 30 Watts	380 - 387
12	Digital Out 1 Common		<u>Minimum DC Load</u> 10 µA, 10 mV DC	
13	Digital Out 1 – N.C. ❶	Fault		
14	Analog In 1 (– Volts)	Voltage – Reads value at 14 & 15 ❷	Non-isolated, 0 to +10V, 10 bit, 100k ohm input impedance. ❸	320 - 327
15	Analog In 1 (+ Volts)			
16	Analog In 1 (– Current)		Non-isolated, 4-20mA, 10 bit, 100 ohm input impedance. ❸	
17	Analog In 1 (+ Current)			
18	Analog In 2 (– Volts)	Voltage – Reads value at 18 & 19 ❷	Isolated, bipolar, differential, 0 to +10V unipolar (10 bit) or ±10V bipolar (10 bit & sign), 100k ohm input impedance. ❹	
19	Analog In 2 (+ Volts)			
20	Analog In 2 (– Current)		Isolated, 4-20mA, 10 bit & sign, 100 ohm input impedance. ❹	
21	Analog In 2 (+ Current)			
22	Analog Out (– Volts) 10V Pot Common	Output Freq ❷	0 to +10V, 10 bit, 10k ohm (2k ohm minimum) load. Referenced to chassis ground. Common if internal 10V supply (terminal 10) is used.	341 - 344
23	Analog Out (+ Volts)			
24	Digital Out 2 – N.O.	Run	See description at No.s 11-13.	380 - 387
25	Digital Out 2 Common			
26	Digital Out 2 – N.C.			

❶ Contacts shown in unpowered state. Relays change state when drive is powered.

❷ These inputs/outputs are dependent on a number of parameters. See “Related Parameters.”

❸ Differential Isolation - External source must be less than 10V with respect to PE.

❹ Differential Isolation - External source must be maintained at less than 160V with respect to PE. Input provides high common mode immunity.

Installation Considerations

Control Wiring, Continued

I/O Wiring

Name	Wire Size Range ①		Torque	
	Maximum	Minimum	Maximum	Recommended
I/O Terminal Block	1.5 mm ² (16 AWG)	0.05 mm ² (30 AWG)	0.55 N-m (4.9 lb.-in.)	0.5 N-m (4.4 lb.-in.)

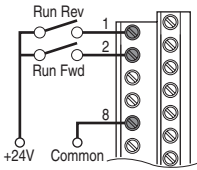
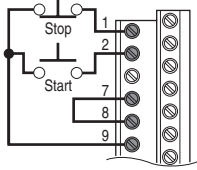
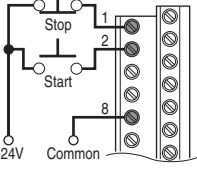
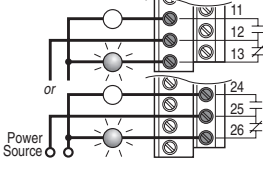
① Maximum/minimum sizes that the terminal block will accept - these are not recommendations.

I/O Wiring Examples

Input/Output	Connection Example	Required Parameter Settings
Potentiometer Unipolar Speed Reference 10k Ohm Pot. Recommended (2k Ohm minimum)		Select Speed Reference source: Param. 090 = 1 "Analog In 1" Adjust Scaling: Param. 091, 092, 322, 323 Check Results: Param. 016
Joystick Bipolar Speed Reference ±10V Input		Set Direction Mode: Param. 190 = 1 "Bipolar" Adjust Scaling: Param. 091, 092, 325, 326 Check Results: Param. 017
Analog Input Bipolar Speed Reference ±10V Input		Adjust Scaling: Param. 091, 092, 325, 326 Check Results: Param. 017
Analog Input Unipolar Speed Reference 0 to +10V Input		Adjust Scaling: Param. 091, 092, 325, 326 Check Results: Param. 017
Analog Input Unipolar Speed Reference 4-20 mA Input		Configure Input for Current: Param. 320, Bit #1 = 1 "Current" Adjust Scaling: Param. 091, 092, 325, 326 Check Results: Param. 017
Analog Output Unipolar 0 to +10V Output. Can Drive a 2k Ohm load (25 mA short circuit limit)		Select Source Value: Param. 342 Adjust Scaling: Param. 343, 344
2 Wire Control Non-Reversing	Internal Supply 	Disable Digital Input 1: Param. 361 = 0 "Not Used" Set Digital Input 2: Param. 362 = 7 "Run"

Installation Considerations

Control Wiring, Continued

Input/Output	Connection Example	Required Parameter Settings
2 Wire Control Reversing	External Supply 	Set Digital Input 1: Param. 361 = 8 "Run Forward" Set Digital Input 2: Param. 362 = 9 "Run Reverse"
3 Wire Control	Internal Supply 	Use factory default parameter settings.
3 Wire Control	External Supply 	Use factory default parameter settings.
Digital Output Form C Relays Energized in Normal State.		Select Source: Param. 380, 384

Specifications

Branch Circuit Protection Devices and Power Dissipation

Drive Catalog Number	Frame®	HP Rating		Input Ratings		Output Amps			Input Branch Circuit Protection Devices										Power Dissipation ⑥	
									Dual Element Time Delay Fuse		Non-Time Delay Fuse		③ Circuit Breaker	④ Motor Circuit Protector	140M Motor Starter with Adjustable Current Range ⑤ ⑥					
		ND	HD	Amps	kVA	Cont.	1 Min.	3 Sec.	① Min.	② Max.	① Min.	② Max.	Amps	Amps	Available Catalog Numbers ⑦				Internal	Total
		208 Volt AC Input																		
20AB2P2	A	0.5	0.33	2.9	1.1	2.5	2.7	3.7	6	6	6	10	15	7	140M-C2E-B40	140M-D8E-B40	—	—	19.2	31.4
20AB4P2	A	1	0.75	5.6	2	4.8	5.5	7.4	10	10	10	17.5	15	7	140M-C2E-B63	140M-D8E-B63	—	—	20.5	51.2
20AB6P8	B	2	1.5	10	3.6	7.8	10.3	13.8	15	15	15	30	30	15	140M-C2E-C10	140M-D8E-C10	140M-F8E-C10	—	22.6	67.2
20AB9P6	B	3	2	14	5.1	11	12.1	16.5	20	25	20	40	40	30	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	—	25.4	92.7
20AB015	C	5	3	16	5.8	17.5	19.2	26.6	20	35	20	70	70	30	140M-C2E-C20	140M-D8E-C20	140M-F8E-C20	—	33.2	174.5
20AB022	D	7.5	5	23.3	8.3	25.3	27.8	37.9	30	50	30	100	100	30	140M-C2E-C25	140M-D8E-C25	140M-F8E-C25	140-CMN-2500	34.2	239.9
20AB028	D	10	7.5	29.8	10.7	32.2	37.9	50.6	40	70	40	125	125	50	—	—	140M-F8E-C32	140-CMN-4000	48.1	318.5
240 Volt AC Input																				
20AB2P2	A	0.5	0.33	2.5	1.1	2.2	2.4	3.3	3	4.5	3	8	15	3	140M-C2E-B25	140M-D8E-B25	—	—	19.2	31.4
20AB4P2	A	1	0.75	4.8	2	4.2	4.8	6.4	6	9	6	15	15	7	140M-C2E-B63	140M-D8E-B63	—	—	20.5	51.2
20AB6P8	B	2	1.5	8.7	3.6	6.8	9	12	15	15	15	25	25	15	140M-C2E-C10	140M-D8E-C10	140M-F8E-C10	—	22.6	67.2
20AB9P6	B	3	2	12.2	5.1	9.6	10.6	14.4	20	20	20	35	35	15	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	—	25.4	92.7
20AB015	C	5	3	13.9	5.8	15.3	17.4	23.2	20	30	20	60	60	30	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	—	33.2	174.5
20AB022	D	7.5	5	19.9	8.3	22	24.4	33	25	45	25	80	80	30	140M-C2E-C25	140M-D8E-C25	140M-F8E-C25	140-CMN-2500	34.2	239.9
20AB028	D	10	7.5	25.7	10.7	28	33	44	35	60	35	110	110	50	—	—	140M-F8E-C32	140-CMN-4000	48.1	318.5
400 Volt AC Input																				
20AC1P3	A	0.37	0.25	1.6	1.1	1.3	1.4	1.9	3	3	3	5	15	3	140M-C2E-B16	—	—	—	17.9	29.4
20AC2P1	A	0.75	0.55	2.5	1.8	2.1	2.4	3.2	4	6	4	8	15	7	140M-C2E-B25	140M-D8E-B25	—	—	19.5	47.3
20AC3P5	A	1.5	1.1	4.3	3	3.5	4.5	6	6	6	6	12	15	7	140M-C2E-B63	140M-D8E-B63	—	—	21.6	65.2
20AC5P0	B	2.2	1.5	6.5	4.5	5	5.5	7.5	10	10	10	20	20	15	140M-C2E-C10	140M-D8E-C10	140M-F8E-C10	—	24.0	88.6
20AC8P7	B	4	3	11.3	7.8	8.7	9.9	13.2	15	17.5	15	30	30	15	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	—	28.2	127.7
20AC011	C	5.5	4	11	7.6	11.5	13	17.4	15	25	15	45	40	15	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	—	27.8	167.8
20AC015	C	7.5	5.5	15.1	10.4	15.4	17.2	23.1	20	30	20	60	60	20	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	—	32.0	225.3
20AC022	D	11	7.5	21.9	15.2	22	24.2	33	30	45	30	80	80	30	140M-C2E-C25	140M-D8E-C25	140M-F8E-C25	140-CMN-2500	34.2	339.6
20AC030	D	15	11	30.3	21	30	33	45	40	60	40	120	120	50	—	—	140M-F8E-C32	140-CMN-4000	42.9	475.8
20AC037	D	18.5	15	35	24.3	37	45	60	50	80	50	125	140	50	—	—	140M-F8E-C45	140-CMN-4000	40.5	404.3
20AC043	D	22	18.5	40.7	28.2	43	56	74	60	90	60	150	160	70	—	—	—	140-CMN-6300	41.5	438.3
20AC060	E	30	22	56.8	39.3	60	66	90	80	125	80	225	240	80	—	—	—	140-CMN-6300	50.0	550.8
20AC072	E	37	30	68.9	47.8	72	90	120	90	150	90	250	280	100	—	—	—	140-CMN-9000	57.7	689.7
480 Volt AC Input																				
20AD1P1	A	0.5	0.33	1.3	1.1	1.1	1.2	1.6	3	3	3	4	15	3	140M-C2E-B16	—	—	—	17.9	29.4
20AD2P1	A	1	0.75	2.4	2	2.1	2.4	3.2	3	6	3	8	15	3	140M-C2E-B25	140M-D8E-B25	—	—	19.5	47.3
20AD3P4	A	2	1.5	3.8	3.2	3.4	4.5	6	6	6	6	12	15	7	140M-C2E-B40	140M-D8E-B40	—	—	21.6	65.2
20AD5P0	B	3	2	5.6	4.7	5	5.5	7.5	10	10	10	20	20	15	140M-C2E-B63	140M-D8E-C63	—	—	24.0	88.6
20AD8P0	B	5	3	9.8	8.4	8	8.8	12	15	15	15	30	30	15	140M-C2E-C10	140M-D8E-C10	140M-F8E-C10	—	28.2	127.7
20AD011	C	7.5	5	9.5	7.9	11	12.1	16.5	15	20	15	40	40	15	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	—	27.8	167.8
20AD014	C	10	7.5	12.5	10.4	14	16.5	22	20	30	20	50	50	20	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	—	32.0	225.3
20AD022	D	15	10	19.9	16.6	22	24.2	33	25	45	25	80	80	30	140M-C2E-C25	140M-D8E-C25	140M-F8E-C25	—	34.2	339.6
20AD027	D	20	15	24.8	20.6	27	33	44	35	60	35	100	100	50	—	—	140M-F8E-C32	140-CMN-2500	42.9	475.8
20AD034	D	25	20	31.2	25.9	34	40.5	54	40	70	40	125	125	50	—	—	140M-F8E-C45	140-CMN-4000	40.5	404.3
20AD040	D	30	25	36.7	39.7	40	51	68	50	90	50	150	150	50	—	—	140M-F8E-C45	140-CMN-4000	41.5	438.3
20AD052	E	40	30	47.7	39.7	52	60	80	60	110	60	200	200	70	—	—	—	140-CMN-6300	50.0	550.8
20AD065	E	50	40	59.6	49.6	65	78	104	80	125	80	250	250	100	—	—	—	140-CMN-9000	57.7	689.7
600 Volt AC Input																				
20AE0P9	A	0.5	0.33	1.3	1.3	0.9	1.1	1.4	3	3	3	3.5	15	3	140M-C2E-B16	—	—	—	17.9	29.4
20AE1P7	A	1	0.75	1.9	2	1.7	2	2.6	3	6	3	6	15	3	140M-C2E-B25	140M-D8E-B25	—	—	19.5	47.3
20AE2P7	A	2	1.5	3	3.1	2.7	3.6	4.8	4	6	4	10	15	7	140M-C2E-B40	140M-D8E-B40	—	—	21.6	65.2
20AE3P9	B	3	2	4.4	4.5	3.9	4.3	5.9	6	8	6	15	15	7	140M-C2E-B63	140M-D8E-B63	—	—	24.0	88.6
20AE6P1	B	5	3	7.5	7.8	6.1	6.7	9.2	10	12	10	20	20	15	140M-C2E-C10	140M-D8E-C10	140M-F8E-C10	—	28.2	127.7
20AE9P0	C	7.5	5	7.7	8	9	9.9	13.5	10	20	10	35	35	15	140M-C2E-C10	140M-D8E-C10	140M-F8E-C10	—	27.8	167.8
20AE011	C	10	7.5	9.8	10.1	11	13.5	18	15	20	15	40	40	15	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	—	32.0	225.3
20AE017	D	15	10	15.3	15.9	17	18.7	25.5	20	35	20	60	60	30	140M-C2E-C20	140M-D8E-C20	140M-F8E-C20	—	34.2	339.6
20AE022	D	20	15	20	20.8	22	25.5	34	25	45	25	80	80	30	140M-C2E-C25	140M-D8E-C25	140M-F8E-C25	140-CMN-2500	42.9	475.8

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

② Maximum protection device size is the highest rated device that supplies drive protection.

③ Circuit breaker - inverse time breaker.

④ Motor Circuit Protector - instantaneous trip circuit breaker.

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

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

⑦ The AIC ratings of the Bulletin 140M Motor Protector may vary without testing. See Publication 140M-SG001B-EN-P.

⑧ At 4kHz PWM frequency. See *PowerFlex Reference Manual* for derating above 4kHz.

⑨ For internally filtered drives, Frame A increases to Frame B. For enclosure Code C (IP66, NEMA 4X/12), Frame A increases to Frame B and Frame C increases to Frame D.

Specifications

Maximum Lead Lengths (in feet)

480V HP Rating	Carrier Freq. (kHz)	1000 Volt Motor			1200 Volt Motor			1488 Volt Motor NEMA MG1-1998			1600 Volt Motor 1329 R/L		
		Shld. ❶	Shld. ❷	Un-Shld.	Shld. ❶	Shld. ❷	Un-Shld.	Shld. ❶	Shld. ❷	Un-Shld.	Shld. ❶	Shld. ❷	Un-Shld.
0.5	2	NA	60	40	NA	175	60	NA	175	150	NA	175	150
	4	NA	60	40	NA	175	60	NA	175	130	NA	175	150
	6	NA	60	40	NA	175	50	NA	175	130	NA	175	150
	8	NA	60	40	NA	175	50	NA	175	130	NA	175	150
	10	NA	60	40	NA	175	50	NA	175	130	NA	175	150
1	2	NA	70	30	NA	275	55	NA	275	180	NA	275	350
	4	NA	70	30	NA	250	55	NA	250	180	NA	250	300
	6	NA	70	30	NA	250	55	NA	250	170	NA	250	280
	8	NA	70	30	NA	250	55	NA	250	160	NA	250	260
	10	NA	70	30	NA	200	55	NA	250	160	NA	250	240
2	2	NA	70	40	NA	275	75	NA	275	500	NA	275	500
	4	NA	70	40	NA	250	75	NA	250	400	NA	250	400
	6	NA	70	40	NA	250	75	NA	250	360	NA	250	400
	8	NA	70	40	NA	240	75	NA	250	260	NA	250	400
	10	NA	70	40	NA	220	75	NA	250	260	NA	250	400
3	2	NA	70	40	NA	220	75	NA	425	600	NA	425	600
	4	NA	70	40	NA	220	75	NA	400	520	NA	400	600
	6	NA	70	40	NA	220	75	NA	425	520	NA	425	600
	8	NA	70	40	NA	220	75	NA	400	380	NA	400	580
	10	NA	70	40	NA	220	75	NA	400	380	NA	400	550
5	2	NA	80	40	NA	280	80	NA	450	600	NA	450	600
	4	NA	80	40	NA	280	80	NA	400	600	NA	400	600
	6	NA	80	40	NA	280	80	NA	400	560	NA	400	600
	8	NA	80	40	NA	280	80	NA	300	400	NA	300	600
	10	NA	80	40	NA	280	80	NA	300	360	NA	300	580
7.5	2	NA	50	40	NA	300	60	NA	400	600	NA	400	600
	4	NA	50	40	NA	300	60	NA	400	600	NA	400	600
	6	NA	50	40	NA	300	60	NA	400	520	NA	400	600
	8	NA	50	40	NA	300	60	NA	400	400	NA	400	560
	10	NA	50	40	NA	300	60	NA	300	320	NA	300	500
10	2	NA	50	40	NA	300	60	NA	400	600	NA	400	600
	4	NA	50	40	NA	300	60	NA	400	600	NA	400	600
	6	NA	50	40	NA	300	60	NA	400	560	NA	400	600
	8	NA	50	40	NA	300	60	NA	400	440	NA	400	560
	10	NA	50	40	NA	300	60	NA	300	380	NA	300	520
15	2	NA	80	50	NA	600	80	NA	600	600	NA	600	600
	4	NA	80	50	NA	400	80	NA	600	600	NA	600	600
	6	NA	80	50	NA	400	80	NA	600	600	NA	600	600
	8	NA	80	50	NA	400	80	NA	600	500	NA	600	600
	10	NA	80	50	NA	400	80	NA	600	400	NA	600	480
20-50	2	NA	70	50	NA	600	80	NA	600	600	NA	600	600
	4	NA	70	50	NA	400	80	NA	600	600	NA	600	600
	6	NA	70	50	NA	200	80	NA	600	600	NA	600	600
	8	NA	70	50	NA	160	80	NA	600	600	NA	600	600
	10	NA	70	50	NA	160	80	NA	600	340	NA	600	600

❶ Cable is Belden 295xx series or equivalent.

❷ Cable is Alcatel C1202 or equivalent. Shielded cable with twisted conductors and no filler.

Notes

- 1000V motor is defined as one assembled without phase paper. 1200V motor is defined as one assembled with phase paper. 1488V motor meets NEMA MG 1-1998 section 31 standard where the insulation can withstand voltage spikes of 3.1 x rated motor voltage due to inverter operation (inverter duty motor). 1600V motor is a 1329R or 1329L. Operation at nominal line voltage. To increase the distance between the drive and the motor, some mitigation device needs to be added to the system (i.e. an RWR or Terminator).
- Shading indicates limited due to cable charging current.
- NA = Data Not Available at time of publication.

Specifications

Control and Performance

Category	Specification					
Protection	PowerFlex 70 Drive	200-208V Drive	240V Drive	380/400 Drive	480V Drive	600V Drive
	AC Input Overvoltage Trip:	247VAC	285VAC	475VAC	570VAC	690VAC
	AC Input Undervoltage Trip:	120VAC	138VAC	233VAC	280VAC	345VAC
	Bus Overvoltage Trip:	350VDC	405VDC	675VDC	810VDC	1013VDC
	Bus Undervoltage Trip:	176VDC	204VDC	339VDC	407VDC	998VDC
	Nominal Bus Voltage:	281VDC	324VDC	540VDC	648VDC	810VDC
	All Drives					
	Heat Sink Thermistor:	Monitored by microprocessor overtemp trip				
	Drive Overcurrent Trip					
	Software Current Limit:	20-160% of rated current				
	Hardware Current Limit:	200% of rated current (typical)				
	Instantaneous Current Limit:	220-300% of rated current (dependent on drive rating)				
	Line transients:	up to 6000 volts peak per IEEE C62.41-1991				
	Control Logic Noise Immunity:	Showering arc transients up to 1500V peak				
	Power Ride-Thru:	15 milliseconds at full load				
Logic Control Ride-Thru:	0.5 seconds minimum, 2 seconds typical					
Ground Fault Trip:	Phase-to-ground on drive output					
Short Circuit Trip:	Phase-to-phase on drive output					
Environment	Altitude:	1000 m (3300 ft) max. without derating				
	Ambient Operating Temperature without derating:					
	IP20, NEMA Type 1	0 to 50 degrees C (32 to 122 degrees F)				
	IP66, NEMA Type 4X/12	0 to 40 degrees C (32 to 104 degrees F)				
	Flange Type	0 to 50 degrees C (32 to 122 degrees F)				
	Storage Temperature (all const.):	-40 to 70 degrees C (-40 to 158 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:	5 to 95% non-condensing				
	Shock:	15G peak for 11ms duration (±1.0 ms)				
	Vibration:	0.152 mm (0.006 in.) displacement, 1G peak				
Agency Certification	Type 1, IP30	Flange Type	Type 4X/12, IP66			
	✓	✓	✓		Listed to UL508C and CAN/CSA-C2.2 No. 14-M91	
		✓			Listed to UL508C for plenums (Rear heatsink only)	
		✓			Marked for all applicable European Directives ① EMC Directive (89/336/EEC) EN 61800-3 Adjustable Speed electrical power drive systems Low Voltage Directive (73/23/EEC) EN 50178 Electronic Equipment for use in Power Installations	
	✓	✓	✓		Certified to AS/NZS, 1997 Group 1, Class A	
	✓	✓	✓		Certified to Criteria C-2, 1983.	
	✓	✓	✓		Certified to EN 954-1, Category 3 for 240V, 400V, and 480V ratings of PowerFlex 70 Enhanced Control with DriveGuard Safe-Off option.	
	✓	✓	✓		TUV Approved to EN 954-1, Category 3 for 600V ratings of PowerFlex 70 Enhanced Control with DriveGuard Safe-Off option.	
The drive is also designed to meet the appropriate portions of the following specifications: NFPA 70 - US National Electrical Code NEMA ICS 3.1 - Safety standards for Construction and Guide for Selection, Installation and Operation of Adjustable Speed Drive Systems. IEC 146 - International Electrical Code.						

① Applied noise impulses may be counted in addition to the standard pulse train causing erroneously high (pulse frequency) readings.

Specifications

Control and Performance, Continued

Category	Specification	
Electrical	Voltage Tolerance:	–10% of minimum, +10% of maximum. See the PowerFlex <i>User Manual</i> , publication 20A-UM001..., for Full Power and Operating Range.
	Frequency Tolerance:	47-63 Hz.
	Input Phases:	Three-phase input provides full rating for all drives. Single-phase operation provides 50% of rated current.
	Displacement Power Factor All Drives:	0.98 across entire speed range.
	Efficiency:	97.5% at rated amps, nominal line volts.
	Max. Short Circuit Current Rating: Using Recommended Fuse or Circuit Breaker Type	Maximum short circuit current rating to match specified fuse/circuit breaker capability.
Control	Method:	Sine coded PWM with programmable carrier frequency.
	Carrier Frequency	2-12 kHz. Drive rating based on 4 kHz
	Output Voltage Range:	0 to rated motor voltage
	Output Frequency Range:	0 to 400 Hz.
	Frequency Accuracy	
	Digital Input:	Within $\pm 0.01\%$ of set output frequency.
	Analog Input:	Within $\pm 0.4\%$ of maximum output frequency.
	Speed Regulation - Open Loop with Slip Compensation:	$\pm 0.5\%$ of base speed across a 40:1 speed range.
	Selectable Motor Control:	Sensorless Vector with full tuning. Standard V/Hz with full custom capability. PF700 adds flux vector.
	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 - 3600 seconds in 0.1 second increments
	Intermittent Overload:	110% Overload capability for up to 1 minute 150% Overload capability for up to 3 seconds
	Current Limit Capability:	Proactive Current Limit programmable from 20 to 160% of rated output current. Independently programmable proportional and integral gain.
	Electronic Motor Overload Protection	Class 10 protection with speed sensitive response. Investigated by U.L. to comply with N.E.C. Article 430. U.L. File E59272, volume 12.

Specifications

Parameter List

Shaded rows denote Enhanced Control parameters.

Parameter Name	Number	Group
Accel Mask	281	Masks & Owners
Accel Owner	293	Masks & Owners
Accel Time X	140, 141	Ramp Rates
Alarm Config 1	259	Alarms
Alarm X @ Fault	229, 230	Diagnostics
Analog In X Hi	322, 325	Analog Inputs
Analog In X Lo	323, 326	Analog Inputs
Analog In X Loss	324, 327	Analog Inputs
Analog In1 Value	16	Metering
Analog In2 Value	17	Metering
Analog Out1 Hi	343	Analog Outputs
Analog Out1 Lo	344	Analog Outputs
Analog Out1 Sel	342	Analog Outputs
Anlg In Config	320	Analog Inputs
Anlg In Sqr Root	321	Analog Inputs
Anlg Out Absolut	341	Analog Outputs
Anlg Out Config	340	Analog Outputs
Anlg Out1 Setpt	377	Analog Outputs
Auto Rstrt Delay	175	Restart Modes
Auto Rstrt Tries	174	Restart Modes
Autotune	61	Torq Attributes
Break Frequency	72	Volts per Hertz
Break Voltage	71	Volts per Hertz
Bus Reg Kd	165	Stop/Brake Modes
Bus Reg Ki	160	Stop/Brake Modes
Bus Reg Kp	164	Stop/Brake Modes
Bus Reg Mode X	161, 162	Stop/Brake Modes
Commanded Freq	2	Metering
Compensation	56	Torq Attributes
Control SW Ver	29	Drive Data
Current Lmt Gain	149	Load Limits
Current Lmt Sel	147	Load Limits
Current Lmt Val	148	Load Limits
Data In XX	300-307	Datalinks
Data Out XX	310-317	Datalinks
DB Resistor Type	163	Stop/Brake Modes
DB While Stopped	145	Stop/Brake Modes
DC Brake Level	158	Stop/Brake Modes
DC Brake Time	159	Stop/Brake Modes
DC Brk Lvl Sel	157	Stop/Brake Modes
DC Bus Memory	13	Metering
DC Bus Voltage	12	Metering
Decel Mask	282	Masks & Owners
Decel Owner	294	Masks & Owners
Decel Time X	142, 143	Ramp Rates
Dig In Status	216	Diagnostics
Dig Out Setpt	379	Digital Outputs
Dig Out Status	217	Diagnostics
Dig OutX Level	381, 385	Digital Outputs
Dig OutX OffTime	383, 387	Digital Outputs

Parameter Name	Number	Group
Dig OutX OnTime	382, 386	Digital Outputs
Digital InX Sel	361-366	Digital Inputs
Digital OutX Sel	380, 384	Digital Outputs
Direction Mask	279	Masks & Owners
Direction Mode	190	Direction Config
Direction Owner	291	Masks & Owners
DPI Data Rate	270	Comm Control
DPI Port Sel	274	Comm Control
DPI Port Value	275	Comm Control
DPI Ref Select	298	Comm Control
Drive Alarm X	211, 212	Diagnostics
Drive Checksum	203	Drive Memory
Drive Logic Rslt	271	Comm Control
Drive OL Count	219	Diagnostics
Drive OL Mode	150	Load Limits
Drive Ramp Rslt	273	Comm Control
Drive Ref Rslt	272	Comm Control
Drive Status X	209, 210	Diagnostics
Drive Temp	218	Diagnostics
Elapsed kWh	14	Metering
Elapsed MWh	9	Metering
Elapsed Run Time	10	Metering
Fault X Code	243-249	Faults
Fault X Time	244-250	Faults
Fault Amps	225	Diagnostics
Fault Bus Volts	226	Diagnostics
Fault Clear	240	Faults
Fault Clear Mode	241	Faults
Fault Clr Mask	283	Masks & Owners
Fault Clr Owner	295	Masks & Owners
Fault Config 1	238	Faults
Fault Frequency	224	Diagnostics
Fault Speed	224	Diagnostics
Feedback Select	80	Spd Mode & Limits
Flux Current	5	Metering
Flux Current Ref	63	Torq Attributes
Flux Up Mode	57	Torq Attributes
Flux Up Time	58	Torq Attributes
Flying Start En	169	Restart Modes
Flying StartGain	170	Restart Modes
HighRes Ref	308	Datalinks
IR Voltage Drop	62	Torq Attributes
Jog Mask	278	Masks & Owners
Jog Owner	290	Masks & Owners
Jog Speed	100	Discrete Speeds
Jog Speed 1	100	Discrete Speeds
Jog Speed 2	108	Discrete Speeds
Language	201	Drive Memory
Last Stop Source	215	Diagnostics
Load Frm Usr Set	198	Drive Memory
Local Mask	285	Masks & Owners

Specifications

Parameter List, Continued

Parameter Name	Number	Group
Local Owner	297	Masks & Owners
Logic Mask	276	Masks & Owners
Man Ref Preload	193	HIM Ref Config
Maximum Freq	55	Torq Attributes
Maximum Speed	82	Spd Mode & Limits
Maximum Voltage	54	Torq Attributes
Minimum Speed	81	Spd Mode & Limits
MOP Frequency	11	Metering
MOP Mask	284	Masks & Owners
MOP Owner	296	Masks & Owners
MOP Rate	195	MOP Config
MOP Reference	11	Metering
Motor Cntl Sel	53	Torq Attributes
Motor NP FLA	42	Motor Data
Motor NP Hertz	43	Motor Data
Motor NP Power	45	Motor Data
Motor NP RPM	44	Motor Data
Motor NP Volts	41	Motor Data
Motor OL Count	220	Diagnostics
Motor OL Factor	48	Motor Data
Motor OL Hertz	47	Motor Data
Motor Poles	49	Motor Data
Motor Type	40	Motor Data
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Output Freq	1	Metering
Output Power	7	Metering
Output Powr Fctr	8	Metering
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PI Control	125	Process PI
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PI Fdback Meter	136	Process PI
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PI Feedback Sel	128	Process PI
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PI Lower Limit	131	Process PI
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PI Preload	133	Process PI
PI Prop Gain	130	Process PI
PI Reference Hi	460	Process PI
PI Reference Lo	461	Process PI
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PI Setpoint	127	Process PI
PI Status	134	Process PI
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Power Loss Time	185	Power Loss

Parameter Name	Number	Group
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Powerup Delay	167	Restart Modes
Preset Speed X	101-107	Discrete Speeds
PWM Frequency	151	Load Limits
Ramped Speed	22	Metering
Rated Amps	28	Drive Data
Rated kW	26	Drive Data
Rated Volts	27	Drive Data
Reference Mask	280	Masks & Owners
Reference Owner	292	Masks & Owners
Reset Meters	200	Drive Memory
Reset To Defaults	197	Drive Memory
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S Curve %	146	Ramp Rates
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Save MOP Ref	194	MOP Config
Save To User Set	199	Drive Memory
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Trim Hi	119	Speed Trim
Trim In Select	117	Speed Trim
Trim Lo	120	Speed Trim
Trim Out Select	118	Speed Trim
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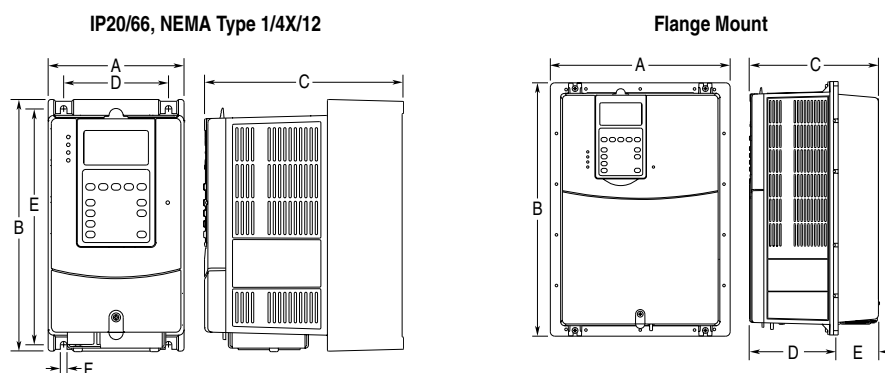
Specifications

Approximate Dimensions – PowerFlex 70 Drives

Rating/Frame Size Cross-Reference

Output Power		Frame Size								
kW ND (HD)	HP ND (HD)	200-240V			400-480V			500-600V		
		Without Internal Filter	With Internal Filter	IP66, NEMA Type 4X/12	Without Internal Filter	With Internal Filter	IP66, NEMA Type 4X/12	Without Internal Filter	With Internal Filter	IP66, NEMA Type 4X/12
0.37 (0.25)	0.5 (0.33)	A	B	B	A	B	B	A	–	B
0.75 (0.55)	1 (0.75)	A	B	B	A	B	B	A	–	B
1.5 (1.1)	2 (1.5)	B	B	B	A	B	B	A	–	B
2.2 (1.5)	3 (2)	B	B	B	B	B	B	B	–	B
4 (3)	5 (3)	–	C	D	B	B	B	B	–	B
5.5 (4)	7.5 (5)	–	D	D	–	C	D	C	–	D
7.5 (5.5)	10 (7.5)	–	D	D	–	C	D	C	–	D
11 (7.5)	15 (10)	–	–	–	–	D	D	D	–	D
15 (11)	20 (15)	–	–	–	–	D	D	D	–	D
18.5 (15)	25 (20)	–	–	–	–	D	D	–	–	–
22 (18.5)	30 (25)	–	–	–	–	D	D	–	–	–
30 (22)	40 (30)	–	–	–	–	E	E	–	–	–
37 (30)	50 (40)	–	–	–	–	E	E	–	–	–

PowerFlex 70 Frames A-D



Dimensions are in millimeters and (inches).

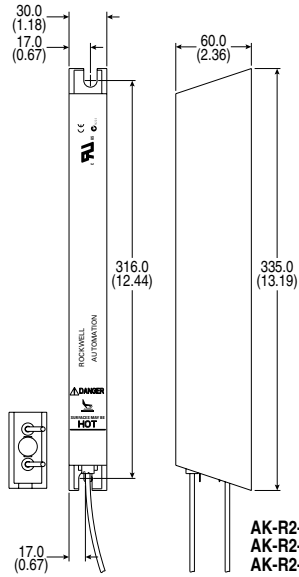
Frame	A	B	C	D	E	F	Drive Weight ❶ kg (lbs.)
IP20, NEMA Type 1							
A	122.4 (4.82)	225.7 (8.89)	179.8 (7.08)	94.2 (3.71)	211.6 (8.33)	5.8 (0.23)	2.71 (6.0)
B	171.7 (6.76)	234.6 (9.24)	179.8 (7.08)	122.7 (4.83)	220.2 (8.67)	5.8 (0.23)	3.60 (7.9)
C	185.0 (7.28)	300.0 (11.81)	179.8 (7.08)	137.6 (5.42)	285.6 (11.25)	5.8 (0.23)	6.89 (15.2)
D	219.9 (8.66)	350.0 (13.78)	179.8 (7.08)	169.0 (6.65)	335.6 (13.21)	5.8 (0.23)	9.25 (20.4)
E	280.3 (11.04)	555.8 (21.88)	207.1 (8.15)	200.0 (7.87)	491.0 (19.33)	6.9 (0.27)	18.60 (41.0)
IP66, NEMA Type 4X/12							
B	171.7 (6.76)	239.8 (9.44)	203.3 (8.00)	122.7 (4.83)	220.2 (8.67)	5.8 (0.23)	3.61 (8.0)
D	219.9 (8.66)	350.0 (13.78)	210.7 (8.29)	169.0 (6.65)	335.6 (13.21)	5.8 (0.23)	9.13 (20.1)
E	280.3 (11.04)	555.8 (21.88)	219.8 (8.65)	200.0 (7.87)	491.0 (19.33)	6.9 (0.27)	18.60 (41.0)
Flange Mount							
A	156.0 (6.14)	225.8 (8.89)	178.6 (7.03)	123.0 (4.84)	55.6 (2.19)	–	2.71 (6.0)
B	205.2 (8.08)	234.6 (9.24)	178.6 (7.03)	123.0 (4.84)	55.6 (2.19)	–	3.60 (7.9)
C	219.0 (8.62)	300.0 (11.81)	178.6 (7.03)	123.0 (4.84)	55.6 (2.19)	–	6.89 (15.2)
D	248.4 (9.78)	350.0 (13.78)	178.6 (7.03)	123.0 (4.84)	55.6 (2.19)	–	9.25 (19.8)
E	280.3 (11.04)	555.8 (21.88)	207.1 (8.15)	117.2 (4.61)	89.9 (3.54)	–	18.60 (41.0)

❶ Weights include HIM and Standard I/O.

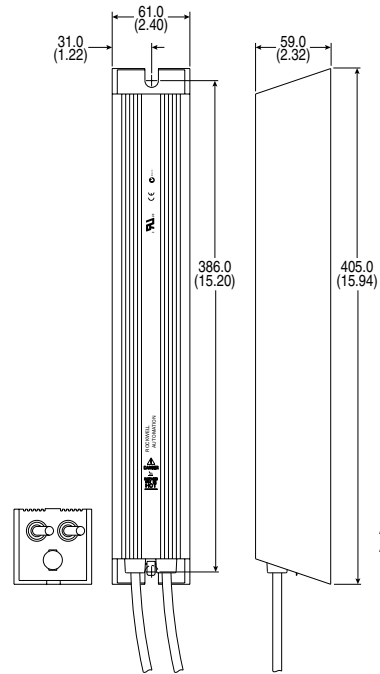
Notes

Approximate Dimensions – Medium Duty External Dynamic Brake Resistors

Dimensions are in millimeters and (inches).

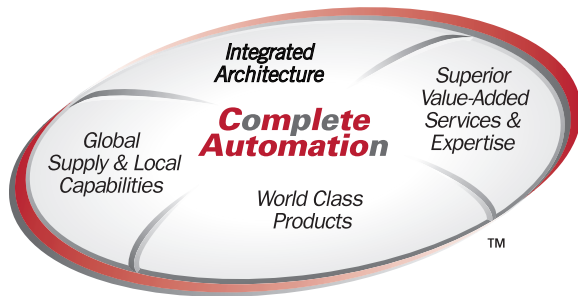


AK-R2-091P500
AK-R2-047P500
AK-R2-360P500



AK-R2-030P1K2
AK-R2-120P1K2

Catalog Number	Ohms	Watts	Frame Size
AK-R2-091P500	91	86	A
AK-R2-047P500	47	166	A
AK-R2-360P500	360	86	A
AK-R2-030P1K2	30	260	B
AK-R2-120P1K2	120	260	B



The Allen-Bradley PowerFlex family of AC drives provides a single-source solution for virtually any drive application requirement ranging from 0.2 to 6,770 kW (0.25 to 8,500 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.

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