Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
PowerFlex 70 Adjustable Frequency AC Drive User Manual, publication 20A-UM001	Provides the basic information needed to start up and troubleshoot the PowerFlex® 70 Adjustable Frequency AC Drive.
PowerFlex 70 and 700 Reference Manual - Volume 1, publication PFLEX-RM001	Provides detailed information for specifications and dimensions, operation, and dynamic brake selection for the drive.
PowerFlex 70 Adjustable Frequency AC Drive Installation Instructions, publication 20A-IN009	Provides the five basic steps needed to install and perform a basic startup of the PowerFlex 70 drive.
Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives, publication DRIVES-IN001	Provides the basic information needed to properly wire and ground Pulse Width Modulated (PWM) AC drives.
Industry Installation Guidelines for Pulse Width Modulated (PWM) AC Drives, publication DRIVES-AT003	Provides basic information for enclosure systems and environmental/location considerations (to help protect against environmental contaminants), and power and grounding considerations needed to properly install AC drives.
Safety Guidelines for the Application, Installation and Maintenance of Solid State Control, publication SGI-1.1	Provides general guidelines for the application, installation, and maintenance of solid-state control.
Preventive Maintenance of Industrial Control and Drive System Equipment, publication DRIVES-TD001	Provides a guide to performing preventive maintenance.
Guarding Against Electrostatic Damage, publication 8000-4.5.2	Provides practices for guarding against Electrostatic damage (ESD)
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, http://www.ab.com	Provides declarations of conformity, certificates, and other certification details.

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

Product Overview

PowerFlex 70 drives are designed to worldwide standards providing out-of-the-box performance around the globe. Available ratings include these options:

- 0.5...25 Hp output at 240V AC input
- 0.5...50 Hp output at 480V AC input
- 0.5...50 Hp output at 600V AC input

The PowerFlex 70 drive can be used with a full featured LCD human interface module (HIM) that provides multilingual text for startup, metering, programming, and troubleshooting.

The PowerFlex 70 can be programmed for either volts per hertz, sensorless vector, or vector control with FORCE™ Technology 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. Computer tools such as DriveExplorer™ and DriveTools™ SP assist with programming, monitoring, and troubleshooting the PowerFlex 70.

Catalog Number Explanation

Position Number

1-3	4	5-7	8	9	10	11	12	13	14	15	16
20A	B	2P2	A	3	A	Y	Y	N	N	C	0
a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*	*j*	*k*	*l*

a

Drive	
Code	Type
20A	PowerFlex 70

b

Voltage Rating		
Code	Voltage	Ph.
B	240V AC	3
C	400V AC	3
D	480V AC	3
E	600V AC	3

c1

ND Rating			
208V, 60 Hz Input			
Code	Amps	kW (Hp)	Frame
2P2	2.5	0.37 (0.5)	A
4P2	4.8	0.75 (1.0)	A
6P8	7.8	1.5 (2.0)	B
9P6	11	2.2 (3.0)	B
015	17.5	4.0 (5.0)	C
022	25.3	5.5 (7.5)	D
028	32.2	7.5 (10)	D
042	43	11 (15)	D
054	62.1	15 (20)	E
070	78.2	18.5 (25)	E

c2

ND Rating			
240V, 60 Hz Input			
Code	Amps	kW (Hp)	Frame
2P2	2.2	0.37 (0.5)	A
4P2	4.2	0.75 (1.0)	A
6P8	6.8	1.5 (2.0)	B
9P6	9.6	2.2 (3.0)	B
015	15.3	4.0 (5.0)	C
022	22	5.5 (7.5)	D
028	28	7.5 (10)	D
042	42	11 (15)	D
054	54	15 (20)	E
070	70	18.5 (25)	E

c3

ND Rating			
400V, 50 Hz Input			
Code	Amps	kW (Hp)	Frame
1P3	1.3	0.37 (0.5)	A
2P1	2.1	0.75 (1.0)	A
3P5	3.5	1.5 (2.0)	A
5P0	5.0	2.2 (3.0)	B
8P7	8.7	4.0 (5.0)	B
011	11.5	5.5 (7.5)	C
015	15.4	7.5 (10)	C
022	22	11 (15)	D
030	30	15 (20)	D
037	37	18.5 (25)	D
043	43	22 (30)	D
060	60	30 (40)	E
072	72	37 (50)	E

c4

ND Rating			
480V, 60 Hz Input			
Code	Amps	kW (Hp)	Frame
1P1	1.1	0.37 (0.5)	A
2P1	2.1	0.75 (1.0)	A
3P4	3.4	1.5 (2.0)	A
5P0	5.0	2.2 (3.0)	B
8P0	8.0	3.7 (5.0)	B
011	11	5.5 (7.5)	C
014	14	7.5 (10)	C
022	22	11 (15)	D
027	27	15 (20)	D
034	34	18.5 (25)	D
040	40	22 (30)	D
052	52	30 (40)	E
065	65	37 (50)	E

c5

ND Rating			
600V, 60 Hz Input ∗			
Code	Amps	kW (Hp)	Frame
0P9	0.9	0.37 (0.5)	A
1P7	1.7	0.75 (1.0)	A
2P7	2.7	1.5 (2.0)	A
3P9	3.9	2.2 (3.0)	B
6P1	6.1	4.0 (5.0)	B
9P0	9.0	5.5 (7.5)	C
011	11	7.5 (10)	C
017	17	11 (15)	D
022	22	15 (20)	D
027	27	18.5 (25)	D
032	32	22 (30)	D
041	41	30 (40)	E
052	52	37 (50)	E

∗ CE certification testing has not been performed on 600V class drives.

d

Enclosure	
Code	Enclosure
A	Panel Mount - IP 20, NEMA/UL Type 1
C	Wall/Machine Mount = IP66, NEMA/UL Type 4X/12 for indoor use only
F	Flange Mount - Front Chassis = IP 20, NEMA/UL Type 1; Rear Heatsink = IP66, NEMA/UL Type 4X/12 for indoor/outdoor use
G	Wall/Machine Mount - IP54, NEMA/UL Type 12 ∗

∗ Only available on Frame E.

e

HIM	
Code	Interface Module
0	Blank Cover
3	Full Numeric LCD
5	Prog. Only LCD ❄

❄ Only available with NEMA 4X, option C.

See Catalog Number Explanation (continued) on page 6 for more drive options.

Catalog Number Explanation (continued)

Position Number

1-3	4	5-7	8	9	10	11	12	13	14	15	16
20A	B	2P2	A	3	A	Y	Y	N	N	C	0
a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*	*j*	*k*	*l*

f

Documentation	
Code	Type
A	Manual
N	No Manual

g

Brake IGBT	
Code	w/Brake IGBT
Y	Yes

h

Internal Brake Resistor	
Code	w/Resistor
Y	Yes
N	No

i

Emission Class	
Code	Rating
A	Filtered∗ A❄ & B Frames (Optional) C, D, & E Frames (Standard)
N	Not Filtered∗ A & B Frames (Optional) C, D, & E Frames

∗ 600V Frames A through D available only without filter (Cat. Code N). 600V Frame E available only with filter (Cat. Code A).

❄ Increases size to Frame B.

j

Comm Slot	
Code	Network Type
C	ControlNet (Coax)
D	DeviceNet
E	EtherNet/IP
N	None

k

Control & I/O		
Code	Control	Safe-Off
N❄	Standard	N/A
C	Enhanced	No
G∗	Enhanced	Yes

❄ No longer available for sale.

∗ Not available as factory installed option for 600V ratings.

l

Feedback	
Code	Feedback
0	No Feedback - Enhanced Control
1	5V/12V Encoder w/Enhanced Control

Approximate Dimensions and Weights

This section provides the approximate dimensions for the drives.

Figure 1 - Frames A…E

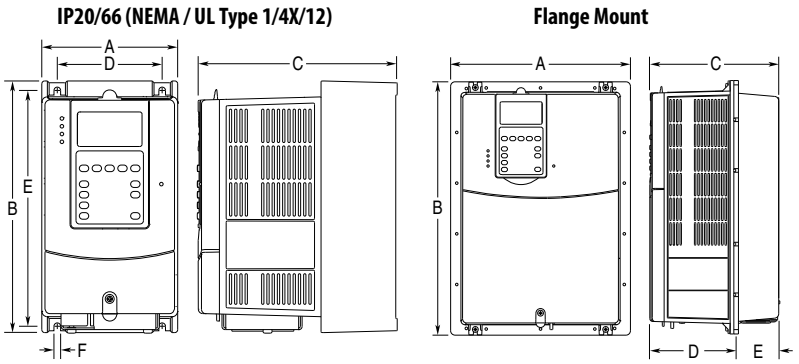

Table 14 - Frame Dimensions, mm (in.)

Frame Size	Dimension						Weight (1)
	A	B	C	D	E	F	kg (lb)
	IP20, NEMA / UL 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 / UL 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 (20.4)
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)

(1) Weights include HIM and standard I/O.

Table 18 - Specifications

Category	Specification						
Protection	**Drive**	**200…208V**	**240V**	**380/400**	**480V**	**600V**	**690V**
	AC input overvoltage trip	247V AC	285V AC	475V AC	570V AC	690V AC	
	AC input undervoltage trip	120V AC	138V AC	233V AC	280V AC	345V AC	
	Bus overvoltage trip	405V DC	405V DC	810V DC	810V DC	1013V DC	
	Bus undervoltage output shutoff	153V DC	153V DC	305V DC	437V DC	437V DC	
	Bus undervoltage fault level	160V DC	160V DC	300V DC	300V DC	375V DC	
	Nominal bus voltage	281V DC	324V DC	540V DC	648V DC	810V DC	
	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					
	Maximum surrounding air temperature without derating						
	IP20, NEMA / UL Type 1 flange mount	0…50 °C (32…122 °F) 0…50 °C (32…122 °F)					
	IP66, NEMA / UL Type 4X/12 (indoor)	0…40 °C (32…104 °F)					
	Cooling fan operation						
	Frames A and C	Fan operates when power is applied.					
	Frames B, D, and E	Fan operates when power is applied and in Run condition.					
	Storage temperature (all const.)	–40…70 °C (–40…158 °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, store the drive where it is not exposed to a corrosive atmosphere.					
	Relative humidity	5…95% non-condensing					
	Shock	15 g peak for 11 ms duration (±1.0 ms)					
	Vibration	0.152 mm (0.006 in.) displacement, 1 g peak					
	Surrounding environment						
	Pollution degree:						
	Pollution degree 1 and 2	All enclosures are acceptable for pollution degree 1 and 2.					
	Pollution degree 3 and 4	An enclosure that meets or exceeds IP54, NEMA / UL Type 12, is required for pollution degree 3 and 4.					
	See Table 19 on page 37 for descriptions of pollution degree rating.						

Table 19 - Pollution Degree Ratings According to EN 61800-5-1

Pollution Degree	Description
1	No pollution or only dry non-conductive pollution occurs. The pollution has no influence.
2	Normally only non-conductive pollution occurs. Occasionally a temporary conductivity, caused by condensation, is expected when the drive is out of operation.
3	Conductive pollution or dry non-conductive pollution occurs, that becomes conductive due to condensation, and is expected.
4	The pollution generates persistent conductivity caused, for example, by conductive dust, rain, or snow.