

# PRODUCT PROFILE

## PowerFlex® 70 AC DRIVE

### OPTIMIZED SIMPLICITY

If you're looking for a compact package of power, control and operator interface, the Allen-Bradley PowerFlex 70 AC drive is designed to meet your demands for space, simplicity and reliability. The PowerFlex 70 drive provides a broad spectrum of features, allowing you to easily configure the drive for most application needs.

#### FLEXIBLE PACKAGING AND MOUNTING

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

**IP 66, NEMA/UL Type 4X/12 (Indoor use)** – For mounting directly in the production environment. Listed by UL to resist dust, dirt, etc. and survive high pressure water spray. Also certified by NSF International to ensure conformity with international food equipment standards.

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

The **PowerFlex 70 Packaged Drives Program** simplifies installation and start up by allowing users to order drive packages that combine operator interface, control, communications and power options in pre-packaged assemblies. Offering a number of commonly requested pre-engineered options, as well as more complex custom-engineered packages, the packaged drives program provides a wide range of motor control options.

#### PREMIER INTEGRATION

For simplified AC drive start-up and reduced development time, we've integrated Allen-Bradley® PowerFlex® drive configuration with RSLogix5000® software. This single-software approach simplifies parameter and tag programming while still allowing stand-alone drive software tool use on the factory floor.



PowerFlex 70 AC Drive  
0.37 to 37 kW; 0.5 to 50 hp

#### SPACE SAVING HARDWARE FEATURES

**Zero Stacking™** - Package styles can be mounted directly next to one another with no reduction of ambient temperature rating (50°C IP20 NEMA/UL Type 1 and Flange Mount, 40°C IP66 NEMA/UL Type 4X/12).

**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.

#### COMMUNICATIONS

The Allen-Bradley® PowerFlex family of drives utilizes Rockwell Automation's NetLinx Open Network Architecture. This provides the common set of features and services for DeviceNet™, ControlNet™ and EtherNet/IP™ networks resulting in lower total cost of ownership. Users can easily manage information from shop floor to top floor and seamlessly integrate their complete system as they control, configure and collect data.

- PowerFlex drives offer internal communication options helping the user to cost-effectively assemble highly integrated applications. Options include: DeviceNet, ControlNet, Universal Remote I/O, and other open communications including Profibus™ and Interbus-S.
- Status indicators for all internal communications options are visible on the cover for easy set-up and monitoring of drive communications.

## EASY-TO-USE HUMAN INTERFACE TOOLS

### PowerFlex 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
- The Wireless Interface Module (WIM) provides a wireless communication interface between the drive and a Pocket PC, laptop computer or desktop computer equipped with Bluetooth® wireless technology
- Remote versions for panel mount applications



### DriveTools™ SP Software Suite



A powerful PC based software suite, for programming, configuring, and troubleshooting.

- DriveExecutive™ – for online/offline configuration and management of drives and drive peripherals.
- DriveObserver™ – for real-time trending of drive information.

### DriveExplorer™ Software



Allen-Bradley DriveExplorer software is an easy-to-use, cost effective online programming tool designed for Microsoft® Windows™ 95/98, Windows NT™ (4.0 or greater), Windows Mobile and Windows CE (2.0 or 2.11) operating systems. It provides the user with the means to monitor and configure PowerFlex drive and communication adapter parameters.

## CONTROL AND PERFORMANCE FEATURES

**Vector Control with FORCE™ Technology\*** provides outstanding torque and speed regulation, with or without encoder feedback.

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

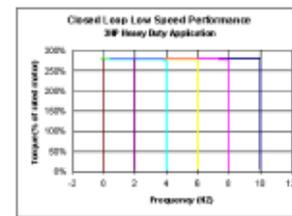
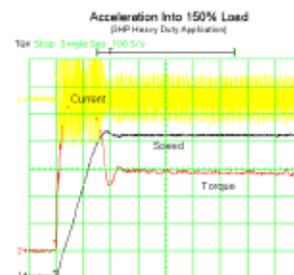
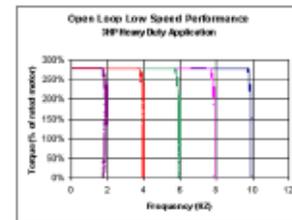
**Safe Off Option\***, the first offering available within the DriveGuard® series of safety solutions, prevents a drive from delivering rotational energy to motors by integrating a safety circuit with the drive's power switching signals. This solution meets EN 954-1, Category 3.

**Droop Control\*** for load sharing applications.

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

**Fiber Specific Features\*** such as synchronized speed change, traverse and P-jump.

\* Feature available for Enhanced Control only.



# 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:



BACnet®	DeviceNet	ControlNet	EtherNet/IP	Remote I/O	RS-485 DFI	Profibus DP	Interbus	LonWorks	Modbus RTU	Modbus TCP	Metasys N2	Siemens P1 FLN	Bluetooth®	
	✓	✓	✓											<b>Unconnected Messaging</b> permits other network devices (e.g. PanelView) to communicate directly to a drive without routing the communication through the network scanner.
✓	✓	✓	✓		✓				✓				✓	<b>Adapter Routing</b> -- Plug PC into one drive and talk to other Allen-Bradley drives on same network, without being routed through the network scanner.
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	<b>Access to 100% of all parameters</b> over the network.
✓	✓		✓			✓							✓	<b>AutoBaud</b> capability makes initial connections less problematic.
	✓													<b>Change Of State</b> 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%").
	✓		✓											<b>Peer Control</b> 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.
	✓													<b>Automatic Device Replacement (ADR)</b> 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.
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	<b>Flexible Fault Configuration</b> – 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").

## SPECIFICATIONS

<b>Control I/O</b>	<ul style="list-style-type: none"> <li>• 6 programmable digital inputs                             <ul style="list-style-type: none"> <li>– 24V DC sink/source (115V AC adapter available)</li> </ul> </li> <li>• 2 programmable form C relays</li> </ul>	<ul style="list-style-type: none"> <li>• 1 analog output 0-10V ❶</li> <li>• 2 analog inputs                             <ul style="list-style-type: none"> <li>– 1 unipolar 0-10V or 4-20mA ❷</li> <li>– 1 bipolar –10 to +10V or 4-20mA ❷</li> </ul> </li> </ul> <p>❶ Enhanced Control also provides 0-20mA on the analog output                      ❷ Enhanced Control provides 0-20mA</p>
<b>Standards</b>	<ul style="list-style-type: none"> <li>• UL and cUL (CSA) Listed</li> <li>• UL508C for plenums (flange type only)</li> <li>• C-Tick (excluding 600V)</li> <li>• NSF (IP66, NEMA/UL Type 4X/12 only)</li> </ul>	<ul style="list-style-type: none"> <li>• CE Marked (excluding 600V)</li> <li>• EMC EN61800-3                             <ul style="list-style-type: none"> <li>– Low Voltage EN60204-1/EN50178</li> </ul> </li> <li>• RINA Certified</li> <li>• TUV Certified to EN954-1, Cat. 3 for 240V, 400V, and 480V Approved for 600V ratings*</li> </ul> <p>* Enhanced Control with DriveGuard Safe-Off option only</p>
<b>Input Specifications</b>	3-Phase Voltage: 200-240V / 380-487V / 500-600V ±10% Frequency: 47-63 Hz Logic Control Ride Through: 0.5 seconds	
<b>Output Specifications</b>	Voltage: Adjustable from 0V to rated motor voltage Frequency Range: 0-500 Hz Overload Current: 110% for 60 seconds, 150% for 3 Seconds	
<b>Enclosure and Ambient Operating Temperatures</b>	Panel Mount – IP20, NEMA/UL Type 1 0° - 50°C (32° - 122°F) Wall/Machine Mount – IP66, NEMA/UL Type 4X/12 0° - 40°C (32° - 104°F) Flange Mount 0° - 50°C (32° - 122°F)	

# RATINGS & DIMENSIONS MM (IN)

Output Power		200 Volt Ratings						240 Volt Ratings					
		Output Current			Frame Size – IP20, NEMA 1 & Flange Type		Frame	Output Current			Frame Size – IP20, NEMA 1 & Flange Type		Frame
kW ND (HD)	HP ND (HD)	Cont. ND (HD)	1 min. ND (HD)	3 sec. ND (HD)	Without Internal Filter	With Internal Filter	IP66 NEMA 4X/12	Cont. ND (HD)	1 min. ND (HD)	3 sec. ND (HD)	Without Internal Filter	With Internal Filter	IP66 NEMA 4X/12
0.37 (0.25)	0.5 (0.33)	2.5	2.7	3.7	A	B	B	2.2	2.4	3.3	A	B	B
0.75 (0.55)	1 (0.75)	4.8	5.5	7.4	A	B	B	4.2	4.8	6.4	A	B	B
1.5 (1.1)	2 (1.5)	7.8	10.3	13.8	B	B	B	6.8	9	12	B	B	B
2.2 (1.5)	3 (2)	11	12.1	16.5	B	B	B	9.6	10.6	14.4	B	B	B
4 (3)	5 (3)	17.5	19.2	26.6	-	C	D	15.3	17.4	23.2	-	C	D
5.5 (4)	7.5 (5)	25.3	27.8	37.9	-	D	D	22	24.4	33	-	D	D
7.5 (5.5)	10 (7.5)	32.2	37.9	50.6	-	D	D	28	33	44	-	D	D
11 (7.5)	15 (10)	43	55.5	74	-	D	D	42	46.2	63	-	D	D
15 (11)	20 (15)	62.1	72.4	96.6	-	E	E	54	63	84	-	E	E
18.5 (15)	25 (20)	78.2	93.1	124	-	E	E	70	81	108	-	E	E

Output Power		400 Volt Ratings						480 Volt Ratings					
		Output Current			Frame Size – IP20, NEMA 1 & Flange Type		Frame	Output Current			Frame Size – IP20, NEMA 1 & Flange Type		Frame
kW ND (HD)	HP ND (HD)	Cont. ND (HD)	1 min. ND (HD)	3 sec. ND (HD)	Without Internal Filter	With Internal Filter	IP66 NEMA 4X/12	Cont. ND (HD)	1 min. ND (HD)	3 sec. ND (HD)	Without Internal Filter	With Internal Filter	IP66 NEMA 4X/12
0.37 (0.25)	0.5 (0.33)	1.3	1.4	1.9	A	B	B	1.1	1.2	1.6	A	B	B
0.75 (0.55)	1 (0.75)	2.1	2.4	3.2	A	B	B	2.1	2.4	3.2	A	B	B
1.5 (1.1)	2 (1.5)	3.5	4.5	6	A	B	B	3.4	4.5	6	A	B	B
2.2 (1.5)	3 (2)	5	5.5	7.5	B	B	B	5	5.5	7.5	B	B	B
4 (3)	5 (3)	8.7	9.9	13.2	B	B	D	8	8.8	12	B	B	B
5.5 (4)	7.5 (5)	11.5	13	17.4	-	C	D	11	12.1	16.5	-	C	D
7.5 (5.5)	10 (7.5)	15.4	17.2	23.1	-	C	D	14	16.5	22	-	C	D
11 (7.5)	15 (10)	22	24.2	33	-	D	D	22	24.2	33	-	D	D
15 (11)	20 (15)	30	33	45	-	D	D	27	33	44	-	D	D
18.5 (15)	25 (20)	37	45	60	-	D	D	34	40.5	54	-	D	D
22 (18.5)	30 (25)	43	56	74	-	D	D	40	51	68	-	D	D
30 (22)	40 (30)	60	66	90	-	E	E	52	60	80	-	E	E
37 (30)	50 (40)	72	90	120	-	E	E	65	78	104	-	E	E

Output Power		500 – 600 Volt Ratings					
		Output Current			Frame Size – IP20, NEMA 1 & Flange Type		Frame
kW ND (HD)	HP ND (HD)	Cont. ND (HD)	1 min. ND (HD)	3 sec. ND (HD)	Without Internal Filter	With Internal Filter	IP66 NEMA 4X/12
0.37 (0.25)	0.5 (0.33)	0.9	1	1.4	A	-	B
0.75 (0.55)	1 (0.75)	1.7	2	2.6	A	-	B
1.5 (1.1)	2 (1.5)	2.7	3.6	4.8	A	-	B
2.2 (1.5)	3 (2)	3.9	4.3	5.9	B	-	B
4 (3)	5 (3)	6.1	6.7	9.2	B	-	D
5.5 (4)	7.5 (5)	9	9.9	13.5	C	-	D
7.5 (5.5)	10 (7.5)	11	13.5	18	C	-	D
11 (7.5)	15 (10)	17	18.7	25.5	D	-	D
15 (11)	20 (15)	22	25.5	34	D	-	D
18.5 (15)	25 (20)	27	33	44	D	-	D
22 (18.5)	30 (25)	32	40.5	54	D	-	D
30 (22)	40 (30)	41	48	64	-	E	E
37 (30)	50 (40)	52	61.5	82	-	E	E

Frame	Height mm (in)	Width mm (in)	Depth mm (in)	Weight <sup>(1)</sup> kg (lbs .)
IP20 / NEMA Type 1				
A	225.7 (8.89)	122.4 (4.82)	179.8 (7.08)	2.71 (6.0)
B	234.6 (9.24)	171.7 (6.76)	179.8 (7.08)	3.60 (7.9)
C	300.0 (11.81)	185.0 (7.28)	179.8 (7.08)	6.89 (15.2)
D	350.0 (13.78)	219.9 (8.66)	179.8 (7.08)	9.00 (19.8)
E	555.8 (21.88)	280.3 (11.04)	207.1 (8.15)	18.60 (41.0)
IP66 / NEMA Type 4X/12				
B	239.8 (9.44)	171.7 (6.76)	203.3 (8.00)	3.61 (8.0)
D	350.0 (13.78)	219.9 (8.66)	210.7 (8.29)	9.13 (20.1)
E	555.8 (21.88)	280.3 (11.04)	219.8 (8.65)	18.60 (41.0)
Flange Mount				
A	225.8 (8.89)	156.0 (6.14)	178.6 (7.03)	2.71 (6.0)
B	234.6 (9.24)	205.2 (8.08)	178.6 (7.03)	3.60 (7.9)
C	300.0 (11.81)	219.0 (8.62)	178.6 (7.03)	6.89 (15.2)
D	350.0 (13.78)	248.4 (9.78)	178.6 (7.03)	9.00 (19.8)
E	555.8 (21.88)	280.3 (11.04)	207.1 (8.15)	18.60 (41.0)

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