PowerFlex™ 70

POWERFUL
PERFORMANCE

FLEXIBLE
CONTROL

Allen-Bradley

The PowerFlex™ Family of Drives

PowerFlex 70 AC Drive

Optimized Simplicity.

Allen-Bradley
RELIANCE ELECTRIC
DODGE
ROCKWELL SOFTWARE
Rockwell Automation

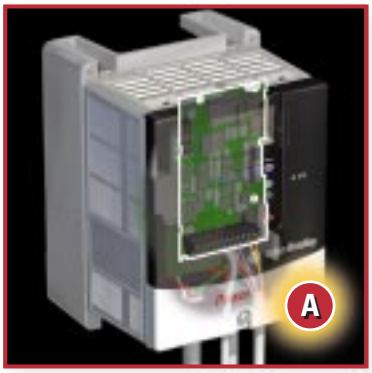
Bringing Together Leading Brands in Industrial Automation

Optimized Simplicity.

Allen-Bradley PowerFlex 70 AC Drive

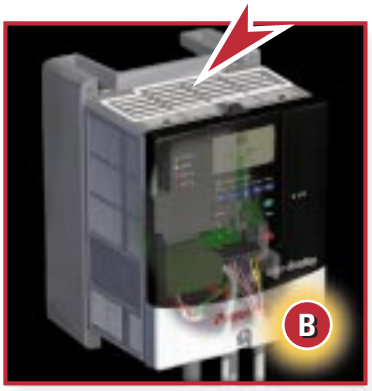
The Allen-Bradley PowerFlex 70 offers a compact package of power, control and operator interface designed to meet global OEM and end-user demands for space, simplicity and reliability. The PowerFlex 70 provides a broad spectrum of features to allow the user to easily configure the drive to meet most application needs.

Product Features



Control

The PowerFlex 70 can be programmed for Volts-per-Hertz or Sensorless Vector control to cover a variety of applications.

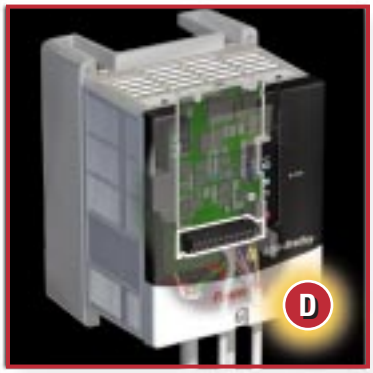


Integral Dynamic Brake

Standard transistor and available drive-mounted (or separately mounted) braking resistor provide cost-effective dynamic brake options.

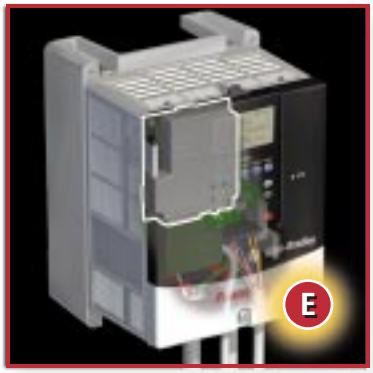
Multi-Color LEDs

Multi-color LEDs – visible through the cover of the PowerFlex 70 – provide clear indication of drive status.



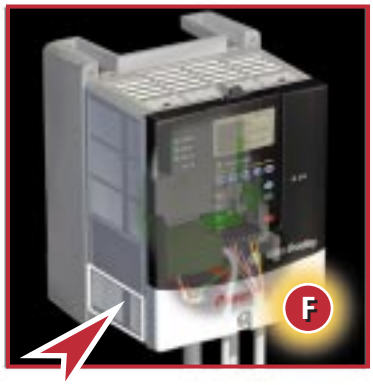
Standard Integral I/O

The PowerFlex 70 provides an effective combination of built-in digital and analog I/O to meet most external control needs. Standard I/O includes 6 digital inputs, 2 relay outputs, 2 analog inputs and 1 analog output.



Internal Communications

The PowerFlex 70 offers an internal communications option allowing the user to integrate the drive into the manufacturing process. Status indicators for all internal communications options are visible on the cover for easy set-up and monitoring of drive communications.



Internal EMC Filter

By including an internal EMC filter, the PowerFlex 70 meets environmental standards without requiring additional panel space.

Wiring

Clearly marked, conveniently placed terminal blocks provide direct access for power and control wiring with a minimal amount of wire bending.

Human Interface Module

Both LED and LCD Human Interface Modules are available for the PowerFlex 70, offering the user flexible, cost-effective options depending on the application.

Human Interface Module.

Flexible Options

The PowerFlex 70 offers two easy-to-mount and operate options for Human Interface Modules (HIMs): the basic LED HIM or an alphanumeric character LCD HIM.

LED HIM

The LED HIM is a cost-effective option for the PowerFlex 70 that displays programming information, drive status and troubleshooting on one 6-digit line. The LED HIM offers users easy parameter access following the drive's File Group and Parameter Organization. The HIM can be set up to restrict parameter viewing to only the basic parameters, further simplifying drive set-up and operation.

LCD HIM

The LCD HIM supports full multi-lingual text for grouping, parameter descriptions, programming, troubleshooting and start-up. It also offers keypad options in a variety of combinations that can include digital or analog speed control, programming keys, control keys and a full-numeric keypad.

S.M.A.R.T. Start

The LCD HIM offers S.M.A.R.T. Start, a start-up utility that quickly and easily provides users with a set of the most commonly programmed parameters, permitting simple drive set-up without in-depth knowledge of the parameter structure. With two simple key strokes, users can access the following parameters:

- **S** Start Mode and Stop Mode
- **M** Minimum Speed and Maximum Speed
- **A** Accel Time 1 and Decel Time 1
- **R** Reference Source
- **T** Thermal Motor Overload

LCD Keypad Options

Programmer Keypad

Full-Numeric Keypad

Digital Keypad

Analog Keypad

Full Graphic Display

The **standard screen** provides a status line, Output Hertz display and four additional lines for programming and operation.

Pop-up screens and menus provide the user with clear information for programming, troubleshooting and operation.

After a convenient delay, the **operating screen** reverts to the "user display", a 3-line process-oriented screen that is user-configurable.

Message boxes aid the user in programming and operation. Error messages, questions about operations and other information is displayed.

A Family of Drives for Virtually any Application.

Allen-Bradley PowerFlex Family of AC Drives

The PowerFlex family of drives is designed for powerful performance and flexible control for motor control applications ranging from low to medium voltage. The family incorporates commonality in networks, operator interface and programming – factors that significantly contribute to ease-of-use and faster application start-up. PowerFlex drives meet industry needs of solution providers, OEMs and end-users for applications ranging from 0.37 kW (0.5 hp) to 3,000 kW (4,000 hp).

Common Operator Interface and Programming

PowerFlex drives feature an advanced, common operator interface. The PowerFlex 70 and PowerFlex 700 LCD Human Interface Modules (HIMs) display drive information on a 7-line by 21-character screen and support multiple languages. The PowerFlex 70 also features a more cost-effective LED HIM option. The PowerFlex 7000 Medium Voltage drive offers users a 16-line, 40-character LCD operator interface. The PowerFlex family of drives features a consistent programming structure, placing identical parameters in identical locations. The family uses consistent parameter names and descriptions, allowing a user of one PowerFlex drive to be immediately comfortable with another, reducing set-up time and providing ease-of-use across the entire family.

Common Network Communications and PC Tools

Common PC tools offered for the PowerFlex family assist the user with programming, monitoring and troubleshooting the drives. Allen-Bradley DriveExplorer™ Software is an easy-to-use, cost-effective tool designed for Microsoft® Windows® 95/98, Windows NT® (4.0 or greater) and Windows CE (2.0 or 2.11) operating systems. It provides the user with the means to monitor and configure PowerFlex drives.

Integrating PowerFlex Into Your Architecture

The 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. This optional built-in connectivity helps OEMs, end-users and systems integrators cost-effectively assemble highly integrated applications that link drives to the manufacturing process through Rockwell Automation NetLinx Open Architecture-based networks, including:

- DeviceNet
- ControlNet

In addition to the NetLinx-based networks, the PowerFlex family of drives also supports:

- Universal Remote I/O
- RS485 DF1
- Other open communications networks including Profibus and Interbus-S

Designed for Worldwide Solutions.

"Out-of-the-Box" Solutions Worldwide

PowerFlex drives are designed to meet user needs anywhere in the world; all feature a flexible, compact form factor and meet world power ratings, packaging requirements and electromagnetic compatibility (EMC) solutions for "out-of-the-box" performance worldwide.

Compact Panel-Mount Design

By combining advances in power semiconductor technology and thermal management with design simplicity, the PowerFlex 70 has superior reliability and is one of the smallest drives on the market today.

Worldwide Standards and Ratings

The PowerFlex 70 meets global standards and ratings for out-of-the-box performance. Drive ratings and defaults are optimized to provide the proper drive set-up no matter where the user is located.

- CSA/cUL Certified
- UL Listed
- C-Tick
- CE Marked
  - EMC — EN61800-3
  - Low Voltage — EN60204-1, EN50178

Multi-Lingual LCD Human Interface Module

By using the LCD HIM users can program and operate the PowerFlex 70 in a variety of languages: Dutch, English, French, Italian, German, Portuguese, and Spanish.

PowerFlex e-Library

The PowerFlex e-Library provides users with information and instructions for ordering, installing, training, programming, operating and troubleshooting PowerFlex drives. The PowerFlex e-Library contains multi-media introductions, interactive simulators, a product selector, product installation package and web links to detailed information about drive software, all in a variety of languages.

Expanded Option Offering with Flexible Packaging

The PowerFlex 70 Configured 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-configured assemblies. Offering a number of commonly requested pre-engineered options, as well as more complex custom-engineered packages, configured drives provide a wide range of motor control options. Three different physical pre-engineered package sizes are provided based upon option mounting requirements.

Style 1

Typical Option List

Style 1 - IP20 (NEMA 1)

- All standard drive options
- Choice of Input Line Fuses, Fused Disconnect or Circuit Breaker

Style 2 - IP20 (NEMA 1) *

All Style 1 options plus:

- Auto Bypass Logic
- Manual Bypass
- Communication Options
- Control Interface and Feedback Options
- Control Transformer
- Door-mounted Options
- Input and/or Output Contactor
- Input or Output Line Reactor
- Motor Interface Option
- Programmable Relay

Style 2

Style 3

Style 3 - IP20 (NEMA 1) *

All Style 2 options plus:

- Oversized Control Transformer
- Input and Output Line Reactor

* Total number of options allowable is determined by available mounting area.

Optimized Performance Simplifies Applications.

Enhanced Reliability

Rockwell Automation engineers conduct rigorous factory testing on PowerFlex drives, including: extensive qualification tests, beta-site testing, the exclusive Rockwell Automation Highly Accelerated Life Testing (HALT), printed circuit board verification and finished drive audits. These tests, along with ongoing manufacturing process improvements and quality monitoring, result in superior drive quality and reliability.

Virtually Trip-Free Operation

Drive quality is more than just hardware – it takes intelligent software to keep the product continually operating. PowerFlex drives have software that continually monitors operating status to ensure process variations can be managed without resulting in downtime.

An example of the intelligent software monitoring operation of the PowerFlex 70 is the active thermal manager, which allows the drive to recognize excessive overload conditions and make internal adjustments that minimize conditions such as drive overheating. In addition, a bus regulation feature can manage line over-voltage or power regenerative situations to help prevent nuisance tripping that interferes with continuous process control.

For added motor protection, PowerFlex drives include reflected wave reduction software to help guard against damaging peak voltages caused by pulse width modulation (PWM) pulse reflection and electronic motor overload software to protect the motor from overload and overheating.

All of these features combine to make PowerFlex drives nearly trip-free, maintaining user uptime and productivity.

Maximized Performance Capabilities

Material Handling

Varying load requirements, which often occur with material handling equipment such as packaging or bottling lines, can be handled easily with the PowerFlex 70 AC drive.

- Bottling Lines
- Oven Conveyors
- Belt Conveyors
- Electrified Monorails
- Shuttle Conveyors
- Packaging Lines
- Runout Tables
- Automotive Body Conveyors

Pumps, Fans and Blowers

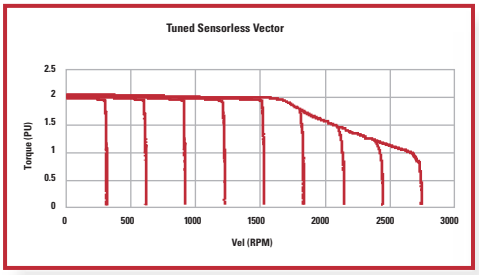
Petroleum processing, chemical plants, filter presses and continuously variable load applications demand accurate control. PowerFlex drives provide precise control of flow in a variety of systems while offering significant energy savings. The PowerFlex 70 offers simple, cost-effective solutions for both basic and demanding applications.

- Paint Booths
- Oil Pipelines
- Clean Rooms
- Recirculation Systems
- WAS/RAS Pumps
- Balanced Draft Fans
- Boiler Feed Pumps

Extruders and Mixers

Extruders and similar-type applications are constant-torque operations which require rated torque from zero to full speed. The high friction and little or no inertia in these applications requires starting torque much higher than rated motor torque. In addition, mills, palletizers and digesters may have substantial shock loads. The Sensorless Vector control of the PowerFlex 70 handles these requirements with ease.

- Mixers
- Extruders
- Mills
- Pelletizers
- Digesters
- Melters
- Centrifuges

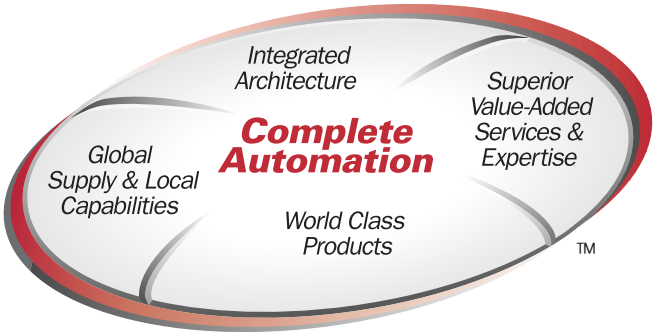


Sensorless Vector control develops exceptional starting and acceleration torque while controlling motor current. Unique vector control algorithms optimize current and torque, providing outstanding performance without the need for special motors, complicated tuning or oversizing drives.

Special Applications

PowerFlex 70 AC drives offer easy-to-use, cost-effective solutions for many other applications, including:

- Grinders
- Mechanical Hoists
- Small Lifts
- Injection Molding Machines
- Flow Pumps



The Allen-Bradley PowerFlex family of AC drives provides a single-source solution for virtually any drive application requirement ranging from 0.37 to 3,000 kW (0.5 to 4,000 hp). Significant commonality across multiple platforms including networks, operator interface, programming and hardware make PowerFlex drives easy to start up, operate and maintain. Multi-lingual programming, operator interface text and voltage-sensitive defaults in PowerFlex drives will help global OEMs and end-users save time and money during set-up, integration and maintenance of virtually any automation system.

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

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

PowerFlex, NetLinx, DriveExplorer, Complete Automation and the Complete Automation graphic are trademarks of Rockwell Automation.

Power Ratings

The PowerFlex 70, a versatile, cost-effective product within the PowerFlex family of drives, is available in four frame sizes that cover ratings from 0.37 to 15 kW (0.5 to 20 hp).

A-Frame	**Class**
0.5 to 2 hp	480 Volt
0.37 to 1.5 kW w/o EMC Filter	400 Volt
0.37 to 0.75 kW (0.5 to 1 hp)	240 Volt
TBD	600 Volt

B-Frame	**Class**
3-5 hp	480 Volt
0.37 to 4 kW w/EMC Filter	400 Volt
1.5 kW (2 hp)	240 Volt
TBD	600 Volt

C-Frame	**Class**
7.5 to 10 hp	480 Volt
5.5 to 7.5 kW	400 Volt
2.2 to 4.0 kW (3 to 5 hp)	240 Volt
TBD	600 Volt

D-Frame	**Class**
15 to 20 hp	480 Volt
11 to 15 kW	400 Volt
5.5 to 7.5 kW (7.5 to 10 hp)	240 Volt
TBD	600 Volt

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