

# PowerFlex® 400 AC Drive

AC Drive Optimized for Commercial Fan and Pump Applications

Providing users with easy installation and ideal for mechanical fan and pump systems, the PowerFlex 400 AC drive offers a wide range of built-in features that allow for seamless building system integration. The PowerFlex 400 is designed to meet global OEM, contractor and end-user demands for flexibility, space savings and ease-of-use.

- Power ratings of 2.2...250 kW/3.0...350 Hp at 380-480V and 2.2...37 kW/3.0...50 Hp at 200-240V
- Integral PID controller allows a process variable to be maintained by automatically adjusting the output frequency
- Three programmable skip frequencies and bands prevent the drive from running continuously at resonant speeds, which could cause mechanical breakdowns
- Selectable fan/pump curves provide reduced voltage patterns for centrifugal fan and pump loads
- Sleep function allows the drive to be cycled off when the system demand drops below a preset level and to be restarted automatically when the demand increases
- For applications that require unattended operation, the Start at Power Up function provides the ability to resume running after power is restored due to a power outage
- Connection to fire and life safety systems via freeze/fire and purge inputs
- Auxiliary motor control allows staging of additional line-started motors to meet system demand
- Damper input can be used to disable the drive output until desired damper position is obtained, even with a valid run command



When your application requires a compact drive optimized for fans or pumps, take advantage of a cost effective solution with application specific features. PowerFlex 400 AC drives offer ease of configuration, low-cost networking and flexible installation.

## Communications

- RS485 communications integral to base drive
- Embedded Modbus RTU, Metasys N2 and P1-Plant Floor Network protocols are parameter selectable and require no additional hardware or software
- Supports Drive Serial Interface (DSI) communication modules and accessories including DeviceNet™, EtherNet/IP™, ControlNet™, PROFIBUS™ DP, BACnet®, LonWorks® and Bluetooth® communications adapters

## Configuration

There are several ways to quickly and easily configure PowerFlex 400 AC drives. From the integral LED HIM, to Connected Components Workbench™ software or the Studio 5000 Logix Designer® application, these tools are designed to help you reduce development time so you can deliver machines faster and more efficiently.

## Packaging

- Disconnect and contactor bypass packages in NEMA 1, 12, 3R and 4 designs simplify installation and startup by combining operator interface, control, communications and power options in preconfigured assemblies
- Contactor bypass packages supplied with three contactors allowing drive test functionality and drive isolation when in bypass mode
- Meets seismic requirements of the 2003 International Building Code as specified by AC156

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## Specifications

<b>Standards</b>	<b>UL and cUL (CSA) listed</b> <b>C-Tick</b>		<b>CE marked</b> <b>EMC EN61800-3 (with external filter)</b> <b>Low voltage EN60204-1/EN 61800-5-1</b>																																																			
<b>Input Specification</b>	<b>3-phase voltage:</b> 200-240 / 380-480V +/-10% <b>Frequency:</b> 48-63 Hz <b>Logic control ride through:</b> >= 0.5 seconds, 2 seconds typical																																																					
<b>Output Specification</b>	<b>Voltage:</b> Adjustable from 0V to rated motor voltage <b>Frequency range:</b> 0 to 320 Hz <b>Overload current:</b> 110% for 60 seconds and 150% for 3 seconds																																																					
<b>Electrical</b>	<b>Voltage tolerance:</b> 200-240V ±10% / 380-480V ±10% <b>Frequency tolerance:</b> 48-63 Hz <b>Input phases:</b> Three-phase input provides full rating. Single-phase operation provides 35% rated current <b>Displacement power factor:</b> 0.98 across entire speed range <b>Efficiency:</b> 97.5% at rated Amps, nominal line voltage <b>Maximum short circuit rating:</b> 100,000 Amps Symmetrical (Frame C drives) / 200,000 Amps Symmetrical (Frame D–H drives) <b>Actual short circuit rating:</b> Determined by AIC rating of installed fuse/circuit breaker <b>Transistor type:</b> Isolated gate bipolar (IGBT) <b>Internal DC bus choke:</b> <ul style="list-style-type: none"> <li>• 200-240V AC Input: 11...37 kW (15...50 Hp) panel mount drives</li> <li>• 380-480V AC Input: 11...110 kW (15...150 Hp) panel mount drives</li> </ul>																																																					
<b>Enclosure and Ambient Operating Temperature</b>	<b>Frame C</b> <ul style="list-style-type: none"> <li>• IP20 / NEMA / UL Type Open: -10 to 50 °C (14 to 122 °F)</li> <li>• IP30 / NEMA / UL Type 1 (with conversion kit): -10 to 45 °C (14 to 113 °F)</li> <li>• NEMA 12 and NEMA 3R/4: -10 to 40 °C (14 to 104 °F)</li> </ul> <b>Frame D, E, F</b> <ul style="list-style-type: none"> <li>• IP30 / NEMA / UL Type 1: -10 to 45 °C (14 to 113 °F)</li> <li>• NEMA 12 and NEMA 3R/4: -10 to 40 °C (14 to 104 °F)</li> </ul> <b>Frame G, H</b> <ul style="list-style-type: none"> <li>• IP30 / NEMA / UL Type 1: -10 to 45 °C (14 to 113 °F)</li> </ul>																																																					
<b>Control</b>	<b>7 digital inputs (24V sink/source)</b> <ul style="list-style-type: none"> <li>• 3 semi-programmable</li> <li>• 4 programmable</li> </ul> <b>2 programmable form C relay outputs</b>		<b>2 analog inputs</b> <ul style="list-style-type: none"> <li>• 1 isolated (-10 to 10V or 4 to 20mA)</li> <li>• 1 non-isolated (0 to 10V or 4 to 20mA)</li> </ul> <b>2 analog outputs (0 to 10V or 4 to 20mA)</b> <ul style="list-style-type: none"> <li>• 1 optocoupler output</li> </ul>																																																			
<b>Options (Accessories)</b>	<b>Communication:</b> LonWorks®, DeviceNet™, EtherNet/IP™, PROFIBUS™, ControlNet™, BACnet®, Bluetooth®		<b>EMC line filters</b> <b>Line and load reactors</b> <b>6-output relay card (Frame D, E, F, G and H)</b> <b>DSI cables</b> <b>IP30 conversion/conduit kit (Frame C)</b>																																																			
<b>Ratings</b>	<table border="1"> <thead> <tr> <th>Input Voltage Class</th> <th>Output Voltage Class</th> <th>kW/Hp</th> <th>Cont. Output Current (Amps)</th> <th>Frame</th> </tr> </thead> <tbody> <tr> <td>200-240V, 3Ø</td> <td>0-230V, 3Ø</td> <td>2.2...7.5 kW/3...10 Hp</td> <td>12-33</td> <td>C</td> </tr> <tr> <td>200-240V, 3Ø</td> <td>0-230V, 3Ø</td> <td>11...22 kW/15...30 Hp</td> <td>49-90</td> <td>D</td> </tr> <tr> <td>200-240V, 3Ø</td> <td>0-230V, 3Ø</td> <td>30...37 kW/40...50 Hp</td> <td>120-145</td> <td>E</td> </tr> <tr> <td>380-480V, 3Ø</td> <td>0-460V, 3Ø</td> <td>2.2...15 kW/3.0...20 Hp</td> <td>6-30</td> <td>C</td> </tr> <tr> <td>380-480V, 3Ø</td> <td>0-460V, 3Ø</td> <td>18.5...30 kW/25...40 Hp</td> <td>38-60</td> <td>D</td> </tr> <tr> <td>380-480V, 3Ø</td> <td>0-460V, 3Ø</td> <td>37...75 kW/50...100 Hp</td> <td>72-142</td> <td>E</td> </tr> <tr> <td>380-480V, 3Ø</td> <td>0-460V, 3Ø</td> <td>90...110 kW/125...150 Hp</td> <td>170-208</td> <td>F</td> </tr> <tr> <td>380-480V, 3Ø</td> <td>0-460V, 3Ø</td> <td>132...160 kW/200...350 Hp</td> <td>260-310</td> <td>G</td> </tr> <tr> <td>380-480V, 3Ø</td> <td>0-460V, 3Ø</td> <td>200...250 kW/300...350 Hp</td> <td>370-460</td> <td>H</td> </tr> </tbody> </table>	Input Voltage Class	Output Voltage Class	kW/Hp	Cont. Output Current (Amps)	Frame	200-240V, 3Ø	0-230V, 3Ø	2.2...7.5 kW/3...10 Hp	12-33	C	200-240V, 3Ø	0-230V, 3Ø	11...22 kW/15...30 Hp	49-90	D	200-240V, 3Ø	0-230V, 3Ø	30...37 kW/40...50 Hp	120-145	E	380-480V, 3Ø	0-460V, 3Ø	2.2...15 kW/3.0...20 Hp	6-30	C	380-480V, 3Ø	0-460V, 3Ø	18.5...30 kW/25...40 Hp	38-60	D	380-480V, 3Ø	0-460V, 3Ø	37...75 kW/50...100 Hp	72-142	E	380-480V, 3Ø	0-460V, 3Ø	90...110 kW/125...150 Hp	170-208	F	380-480V, 3Ø	0-460V, 3Ø	132...160 kW/200...350 Hp	260-310	G	380-480V, 3Ø	0-460V, 3Ø	200...250 kW/300...350 Hp	370-460	H			
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<b>Dimensions mm (in)</b>	<b>C Frame:</b> 260 (10.2) H x 130 (5.1) W x 180 (7.1) D <b>D Frame:</b> 384 (15.12) H x 250 (9.84) W x 205.4 (8.08) D <b>E Frame:</b> 589 (23.19) H x 370 (14.57) W x 260 (10.24) D <b>F Frame:</b> 850 (33.46) H x 425 (16.73) W x 280 (11.02) D <b>G Frame:</b> 892 (35.1) H x 425 (16.7) W x 264 (10.4) D <b>H Frame:</b> 1364 (53.7) H x 529 (20.8) W x 359 (14.1) D																																																					

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