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PRODUCT PROFILE

POWERFLEX® 400 AC DRIVE

AC DRIVE OPTIMIZED FOR COMMERCIAL FAN AND PUMP APPLICATIONS

Providing users with easy installation in mechanical fan and pump systems, the Allen-Bradley PowerFlex® 400 AC drive offers a wide range of built-in features allowing for seamless building system integration. Available in power ratings of 2.2-250 kW (3.0-350 Hp) @ 380 – 480V AC and 2.2-37 kW (3.0-50 Hp) @ 200 – 240V AC, the PowerFlex 400 AC Drive is designed to meet global OEM, contractor and end-user demands for flexibility, space savings and ease-of-use. The PowerFlex 400 AC drive is a cost-effective solution for speed control in variable torque fan and pump applications.

Features

- 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 PowerUp Function provides the ability to resume running once power is restored after 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

PowerFlex 400 AC Drive

Operator Keypad

- Integral keypad features 2 line, 16 character LCD display
- 5 LED indicators provide system configuration and fault status
- Configurable Hand/Off/Auto function buttons

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
- DriveExplorer™ and DriveTools™ SP software can be used to easily program, monitor and control the drives

Premier Integration with PowerFlex Drives

For simplified AC drive start-up and reduced development time using the Allen-Bradley® Logix control platform, we've integrated PowerFlex® AC drive configuration with RSLogix™ 5000 software. This single-software approach simplifies parameter and tag programming while still allowing stand-alone drive software tool use on the factory floor.

Packaging

- Installation flexibility is enhanced by the UL plenum rating allowing for direct mounting in an air handling system
- 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 3 - 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

SPECIFICATIONS

Standards

- UL and cUL (CSA) Listed
- UL Plenum Rating
- C-Tick
- CE Marked
- EMC EN61800-3 (with external filter)
- Low Voltage EN60204-1/EN50178

Input Specification

3-Phase Voltage: 200-240 / 380-480V +/-10%
Frequency: 48-63 Hz
Logic Control Ride Through: >= 0.5 seconds, 2 seconds typical

Output Specification

Voltage: Adjustable from 0V to rated motor voltage
Frequency Range: 0 to 320 Hz
Overload Current: 110% for 60 seconds and 150% for 3 seconds

Electrical

Voltage Tolerance: 200-240V ±10% / 380-480V ±10%
Frequency Tolerance: 48-63 Hz
Input Phases: Three-phase input provides full rating. Single-phase operation provides 35% rated current.
Displacement Power Factor: 0.98 across entire speed range
Efficiency: 97.5% at rated Amps, nominal line voltage
Maximum Short Circuit Rating: 100,000 Amps Symmetrical (Frame C Drives) / 200,000 Amps Symmetrical (Frame D–H Drives)
Actual Short Circuit Rating: Determined by AIC Rating of installed fuse/circuit breaker
Transistor Type: Isolated Gate Bipolar (IGBT)
Internal DC Bus Choke:
200-240V AC Input: 11-37 kW (15-50 Hp) Panel Mount Drives
380-480V AC Input: 11-110 kW (15-150 Hp) Panel Mount Drives

Enclosure and Ambient Operating Temperature

• Frame C	
IP20 / NEMA/UL Type Open:	-10 to 50°C (14 to 122°F)
IP30 / NEMA/UL Type 1 (with conversion kit):	-10 to 45°C (14 to 113°F)
NEMA 12 and NEMA 3R/4	-10 to 40°C (14 to 104°F)
• Frame D, E, F	
IP30 / NEMA/UL Type 1 (with conversion kit):	-10 to 45°C (14 to 113°F)
NEMA 12 and NEMA 3R/4	-10 to 40°C (14 to 104°F)
• Frame G, H	
IP30 / NEMA/UL Type 1 (with conversion kit):	-10 to 45°C (14 to 113°F)

Control

- 7 Digital Inputs (24V sink/source)
  - 3 Semi-Programmable
  - 4 Programmable
- 2 Programmable Form C Relay Outputs
- 2 Analog Inputs
  - 1 Isolated (-10 to 10V or 4 to 20mA)
  - 1 Non-Isolated (0 to 10V or 4 to 20mA)
- 2 Analog Outputs (0 to 10V or 4 to 20mA)
  - 1 Optocoupler Output

Options (Accessories)

- Communication: LonWorks®, DeviceNet™, EtherNet/IP™, PROFIBUS™, ControlNet™, BACnet®, *Bluetooth*®
- EMC Line Filters
- Line and Load Reactors
- 6-output relay card (Frame D, E, F, G and H)
- DSI Cables
- IP30 Conversion/Conduit Kit (Frame C)

Ratings

Input Voltage Class	Output Voltage Class	kW (Hp)	Cont. Output Current (Amps)	Frame
200-240V, 3Ø	0-230V, 3Ø	2.2-7.5 (3-10)	12-33	C
200-240V, 3Ø	0-230V, 3Ø	11-22 (15-30)	49-90	D
200-240V, 3Ø	0-230V, 3Ø	30-37 (40-50)	120-145	E
380-480V, 3Ø	0-460V, 3Ø	2.2-15 (3.0-20)	6-30	C
380-480V, 3Ø	0-460V, 3Ø	18.5-30 (25-40)	38-60	D
380-480V, 3Ø	0-460V, 3Ø	37-75 (50-100)	72-142	E
380-480V, 3Ø	0-460V, 3Ø	90-110 (125-150)	170-208	F
380-480V, 3Ø	0-460V, 3Ø	132-160 (200-350)	260-310	G
380-480V, 3Ø	0-460V, 3Ø	200-250 (300-350)	370-460	H

Dimensions mm (in)

C Frame: 260 (10.2) H x 130 (5.1) W x 180 (7.1) D
D Frame: 384 (15.12) H x 250 (9.84) W x 205.4 (8.08) D
E Frame: 589 (23.19) H x 370 (14.57) W x 260 (10.24) D
F Frame: 850 (33.46) H X 425 (16.73) W X 280 (11.02) D
G Frame: 892 (35.1) H X 425 (16.7) W X 264 (10.4) D
H Frame: 1364 (53.7) H X 529 (20.8) W X 359 (14.1) D

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