

## Industrial Fan/Pump Drive



## Normal Duty



## P7 Drive, 5 - 500 HP

**The P7 Drive:** For industrial applications such as centrifugal fans and pumps, the P7 drive is an ideal choice. The drive is provided in Normal Duty ratings with 110% overload capability. V/f control mode, network communication options, and an array of input/output options are available.

The P7 is factory-programmed and ready to run. For operational simplicity and clarity, the LCD operator display has 5 lines x 16 characters. It can be set to any of 6 languages. The keypad is intuitive and includes parameter copying to move a chosen set of parameters from one drive to another. If the application requires programming, the P7 makes it easy. Parameters are grouped in easy to use sets; quick start and advanced. To enhance parameter and data management, DriveWizard software for the PC is available at no charge, for upload/download, trending, and graphing.

This drive is designed for tough industrial environments. It is rugged and reliable, with an MTBF of 28 years. A variety of enclosure options provide the right environmental protection. Providing the right power requirements is also easy with 208/240 and 480 volt ratings, built-in bus choke above 30 HP, common bus capability, and other energy savings options. Other features include motor auto-tuning and configurable options such as circuit breakers and fuses.

The P7 supports the industry's open architecture, open connectivity demands with network communications choices such as DeviceNet, Profibus-DP, and others. Drive coordination with other equipment is simplified with inputs and outputs for 4 to 20 mA, 0-10V, and an assortment of programmable contacts.

With an optional phase-shifting input transformer, the P7 dual-diode bridge can be operated in 12-pulse rectification mode, reducing input current harmonic distortion factor by over 90%. With lower EMI/RFI emission and lower total harmonic distortion contribution, the P7 meets or exceeds the generally accepted power quality standards. Inherent motor protection features resulting from low noise/low carrier technology provides for longer lead lengths without additional motor protection devices.

The optional P7/Bypass package is a 3-contactor style bypass, allowing motor operation from the drive or across the line. This facilitates drive maintenance while the motor continues to operate.

The P7 has been designed to provide the features and options commonly needed for fan and pump applications.

## Performance Features

- Ratings: 5-150 HP, 208 VAC  
5-150 HP, 230 / 240 VAC  
5-500 HP, 480 VAC  
5-250 HP, Bypass
- Overload capacity: nominal 110% for 60 sec (150% peak)
- Starting torque: 100% at 3 Hz
- DC injection braking: at start or stop, adjustable, current-limited (anti-windmilling)
- Motor preheat function
- Adjustable accel/decel: 0.1 to 6000 sec.
- Controlled speed range: 40:1
- Critical frequency rejection: 3 selectable, adjustable bands
- Torque-limiting: 30 to 180%
- Energy saving control
- Torque boost: full range, auto
- Power loss ride-thru: 2 sec.
- Inertia ride-thru
- Auto restart after power loss or resettable fault, selectable, programmable
- Feedback signal loss detection
- Serial communications loss detection
- "Up/Down" floating point control capability
- Stationary motor auto-tuning
- Sleep function
- Run-permissive input

## Protective Features

- Current-limited stall prevention
- Heat sink over-temperature, speed fold-back
- Bi-directional start into rotating motor
- Current-limiting DC bus fuse
- Optically-isolated controls
- Short circuit protection: Phase-phase and phase-neutral
- Ground fault protection
- Electronic motor overload: UL
- Current limit
- Fault display: last 10 faults
- Fault circuit: OC, OV, OT
- Over torque and under torque protection
- Reverse prohibit selectability

## Service Conditions

- Ambient Temperature: -10°C to 40°C NEMA 1, 45°C protected chassis (14°F to 104°F, 113°F)
- Humidity: 95% RH, non-condensing
- Altitude: 3300 ft; higher by derate
- Input voltage: +10% / -15%
- Input frequency: 50/60 Hz ± 5%
- 3-phase, 3-wire, phase sequence insensitive

## Design Features

- LCD keypad display, 5 lines x 16 characters, backlit, 6 languages, copy function
- Multi-step speed settings: 5 available
- Setpoint (PI) control
- 32-bit microprocessor logic
- Non-volatile memory, program retention
- Displacement power factor: 0.98
- Output frequency: 0.1 to 120 Hz
- Frequency resolution: 0.06 Hz
- Frequency regulation: 0.1%
- Control Terminal Board: Quick disconnect
- Carrier frequency: selectable to 15 kHz
- 3% DC bus reactor: 30-150 HP, 208 VAC; 30-150 HP, 240 VAC; 40-500 HP, 480 VAC; optional on lower ratings
- 24 VDC control logic, PNP / NPN selectable
- Transmitter/Option power supply
- Input/output terminal status
- Timer function: Elapsed time, Delay on start, Delay on stop
- RS-422/485 port: Modbus protocol
- Volts/hertz ratio: Preset and programmable V/Hz patterns
- Meter Functions: Volt, amp, kilowatt, elapsed run time, speed command
- NEMA 1 or protected chassis
- UL, cUL listed and CE marked; IEC 146;
- MTBF: exceeds 28 years
- DriveWizard™ upload/download and monitoring/graphing software

## Inputs and Outputs

- Output contacts: 1 form C and 2 programmable form A
- Input terminals: 5 programmable multi-function input terminals
- Fault input: Programmable
- Remote speed command: 0 to 10 VDC or 4 to 20 mA, direct or reverse-acting
- Analog outputs: Programmable, two, 0-10 VDC

## Bypass Features

- Input, output, and bypass contactors
- Circuit breaker disconnect (MCP)
- Thermal motor overload relay, class 20
- 115 VAC control transformer, fused
- Drive/Bypass selector
- Hand/Off/Auto selector
- Normal/Test selector
- Pilot lights
- Selectable auto transfer to bypass on drive fault
- Run mode and Fault contacts
- Safety circuit interlock
- Control and safety circuit terminal strip
- Customer Use, 115V, 100VA

## Options

- Remote digital operator kit
- Input CB/disconnect
- Input fuses, I<sup>2</sup>t
- Input and/or output reactor
- Twelve-pulse rectification with input transformer: 30 to 150 HP at 240 VAC, 40 to 500 HP at 480 VAC
- Communication Interface: DeviceNet, Profibus, LonWorks, Ethernet and Modbus Plus
- RFI/EMI filter / EMC
- Pressure transducer, 3 to 15 PSI
- Analog outputs: programmable, 2, 4 to 20 mA
- 2-Motor OR/AND capability

## Other Industrial Drives



V7 Drive NEMA 1, V/f or open loop vector, 1/8 - 10 HP.  
Flyer FL.V7.01



V74X Drive Integral NEMA 4X/12, V/f or open loop vector, 1/8-15 HP.  
Flyer FL.V74X.01



G7 Drive Ultimate Performance Solution 3-level Inverter, 1/8 - 500 HP.  
Flyer FL.G7.01



F7 Drive Industrial Workhorse, Normal and Heavy Duty, 1/2 - 500 HP. Flyer FL.F7.01



Yaskawa Electric America, Inc.  
2121 Norman Drive South  
Waukegan, IL 60085

800-YASKAWA (927-5292) Fax: 847-887-7310  
DrivesHelpDesk@yaskawa.com www.yaskawa.com

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