

Specifications and Features for F7 Drive

The F7 Drive: This AC drive is the Industrial Workhorse that can handle every conventional application found within the typical industrial plant, from simple variable torque pumping to sophisticated networked material handling. All of this is possible with the smart and flexible design platform of the F7, providing both Normal and Heavy Duty ratings, four modes of control, network communication options, application-specific drive software, and an array of standard and optional input/output choices.

The F7 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 7 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 F7 makes it easy. Parameters are grouped in easy to use sets; quick start and advanced. To enhance parameter and data management, Drive Wizard 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. The dual ratings, Normal and Heavy duty, enable the most economical match of overload capacity and starting torque for the application. Providing the right fit to power requirements is also easy with 208/240 and 480 volt ratings, built-in bus choke above 30 HP, 12-pulse capability above 30 HP, common bus capability, and regeneration options. Patented high slip braking can eliminate the need for dynamic braking resistors for high inertia loads. Other features include motor auto-tuning and a wide range of configurable options, such as breakers and fuses.

To provide the optimum control method, the F7 can operate in conventional V/f, V/f with encoder feedback, open loop vector, or closed loop vector mode. Drive performance can be further enhanced for a specific application with optional software.

The F7 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 digital pulse train, 4 to 20 mA, -10 to +10 V, and an assortment of programmable contacts.

For new installations or retrofits, the F7 is truly the Industrial Workhorse, perfect for every conventional application...and even some unconventional ones

Performance Features

- Ratings:
0.5 to 150 HP, 208 to 240 VAC
0.75 to 500 HP, 480 VAC
- Overload capacity:
150% for 1 min heavy duty, nominal

Design Features

- LCD keypad display, 5 lines x 16 characters, backlit, 7 languages, copy function
- Multi-speed settings: 17 available
- Setpoint (PID) trim control

- 110% for 1 min normal duty
- Starting torque: 150%, at 1Hz (V/f), at 0.5 Hz (open loop), at 0.3 Hz (closed loop)
- Output frequency: 0.01 to 300 Hz for heavy duty, 400 Hz for normal duty
- Controlled speed range: 40:1 (V/f), 50:1 (V/f with PG), 200:1 (open loop), 1000:1 (closed loop)
- Speed regulation: 2-3% (V/f), 0.02% (V/f with PG), 0.2% (open loop), 0.01% (closed loop)
- Speed/frequency resolution: 0.01% with digital reference, 0.1% with analog reference, 0.1 Hz with Modbus
- Electronic reversing
- Adjustable accel/decel: 0.1 to 6000 sec
- Stall prevention
- Drive efficiency: 96 to 98%
- Displacement power factor: 0.98
- Power loss ride-thru: 2 sec
- Inertial ride-thru
- Selectable auto restart after momentary power loss
- Programmable auto restart (0 to 10 attempts) on re-settable fault
- Critical frequency rejection: 3 selectable, adjustable bands
- Signal follower: bias and gain
- Up / down / hold reference (digital M.O.P.)
- Timer function; on/off delay
- 32-bit microprocessor logic
- Easy access, quick start parameter groups
- Nonvolatile memory/program retention
- Flash memory for update and custom applications
- 24 VDC control logic
- DC injection braking, adjustable level
- Dynamic braking
- High-slip braking
- Ramp to stop or coast to stop
- Dual motor parameter sets
- Synchronized start into rotating motor
- Motor auto-tuning, static and dynamic
- Common bus capability
- DC link choke: 30 to 150 HP at 240 VAC, 30 to 500 HP at 480 VAC
- Twelve-pulse capability: 30 to 150 HP at 240 VAC, 30 to 500 HP at 480 VAC
- Terminal strip, quick disconnect
- Split cover for easy wiring
- Plug-in heat sink fan

Protective Features

- DC bus CHARGE indicator
- Optically-Isolated controls
- Phase-to-phase / phase-to-neutral short circuit protection
- Ground fault protection
- Electronic motor overload (UL)
- Current and torque limit
- Over-torque / under-torque detection
- Fault circuit: over-current, over-voltage, and over-temperature

Service Conditions

- Ambient service temperatures: -10 to 40 °C (104°F) NEMA 1, to 45°C (113°F) protected chassis
- Humidity: non-condensing 95%
- Altitude: to 3300 feet (1000 meter)
- Input voltage: +10% / -15%, 3 phase 200 to 240 VAC, 380 to 480 VAC
- Enclosure: NEMA 1 or protected chassis (other options)
- Input frequency: 50/60 Hz ± 5%
- 3-phase, 3-wire phase insensitive

- Input/output phase loss
- Vibration: 1G, (10 to 20Hz), 0.2G (20 to 50Hz)

Inputs and Outputs

- Analog inputs:
-10 to +10 VDC (20K ohms) or 4 to 20 mA (250 ohm)
- Analog outputs:
-10 to +10 VDC or 4-20 mA
proportional to output parameters
- Digital pulse train input/output (32 KHz max)
- Digital Inputs: 8 multi-function
- Programmable outputs: Three form A
- Fault contacts: form C
- RS-485/422 communication terminals

Standards & Reliability

- UL, cUL & CE listed
- IEC: 146A
- MBTF: Exceeds 28 years
- Tested on fully-loaded motors
- Surface mount technology

Additional Features for V/f

- Torque boost: full range, auto
- V/f ratio: 15 preset, one adjustable
- Slip compensation