Description

1/2-500HP
E7/3-Contactor Bypass
NEMA 1/12 FVFF

E7B

The E7/Bypass package is a 3-contactor style bypass, allowing motor operation from either the drive or across the line. This facilitates drive maintenance while the motor continues to operate. The E7 and E7/Bypass have been designed for flexibility in providing the features and options commonly specified by facility designers.

The E7 Drive is a variable torque AC drive, designed specifically for HVAC applications in building automation. A new benchmark for size, cost, performance, benefits, and quality, the E7 includes numerous built-in features such as Network Communications, H/O/A, PI control and energy savings functions.

The E7 has embedded communications for the popular building automation protocols, Johnson Controls Metasys N2 and Siemens APOGEE FLN, as well as Modbus. An optional LonWorks, EtherNet/IP or BACnet interface card is available.

Image Displayed with Motor Control Option **(0)**, 22 mm LEDs and Switches

Bypass Features

- Input, output, and bypass contactors
- Circuit breaker disconnect (MCP), with interlocked, through-the-door operating mechanism
- Thermal motor overload relay, class 20
- 115 VAC control transformer, fused
- Drive/Bypass selector
- Hand/Off/Auto selector
- Normal/Test selector
- LED's, for Control: Power, Drive Run, Drive Fault, Bypass Run, Motor OL/Safety Fault and Smoke Purge
- Selectable auto transfer to bypass on drive fault
- Selectable remote transfer to bypass via contact closure
- Selectable smoke purge function
- Run mode and Fault contacts
- Control and safety circuit terminal strip
- Damper circuit safety interlock

Bypass Options

- NEMA 12 FVFF enclosure
- 22mm LEDs & switches
- Twelve-pulse rectification with input transformer: 25 -150 HP, 208 VAC; 30-150 HP, 230/240 VAC; 40-500 HP, 480 VAC
- LCD display: 5 lines, 16 characters each
- Communication: LonWorks, BACnet and EtherNet/IP
- RFI/EMI filter
- Pressure/electrical transducer
- Multiple motor operation logic:
  2 Motor "OR"
  2 Motor "AND"
- Speed potentiometer
- Engraved nameplates
- DriveWizard upload/download and monitoring/graphing software
- Drive input fusing
- 4-20mA output, 2 programmable
- Output impedance
- Input impedance

Service Conditions

- Ambient Temperature:
  -10°C to 40°C(14°F to 104°F) NEMA 1
- 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

Performance Features

- VT Ratings: 1/2-150 HP, 208 VAC
  1/2-150 HP, 230/240 VAC
  1/2- 500 HP, 480 VAC
- Overload capacity: 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: 30-180%
- Energy $aving 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
- Customizable monitor display
- Sleep function
- Run permissive input
- Ramp-to-stop or coast-to-stop selection
- Runtime changes in control and display
- Project-specific parameter reinitialization

Protective Features

- Current limited stall prevention
- Heat sink over-temperature, speed fold-back
- Cooling fan operating hours recorded
- Bi-directional start into rotating motor at synchronized speed
- DC bus charge indicator
- Current limiting DC bus fuse
- Optically-Isolated controls
- Short circuit protection: Phase-phase and phase-neutral
- Ground fault protection
- Electronic motor overload: UL
- Current and torque limit
- Fault display: last 10 faults
- Fault circuit: OC, OV, OT
- Over torque and under torque protection
- Program security code
- "Hunting" prevention logic
- Reverse prohibit selectability

Design Features

- 32-bit microprocessor logic
- Flash upgradeable firmware
- Non-volatile memory, program retention
- Surface-mount devices
- 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, removable
- 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
- Keypad Operator: Hand/Off/Auto, built-in copy feature, 7 languages
- 24 VDC control logic
- Transmitter/Option power supply
- Output contacts: One form C and two programmable form A
- Input/output terminal status
- Input terminals: 5 programmable multi-function input terminals
- Fault input: Programmable
- Diagnostic fault indication in selected language
- Timer function: Elapsed time, Delay on start, Delay on stop
- RS-422/485 port: Embedded Metasys N2, APOGEE FLN, and Modbus
- Volts/hertz ratio: Preset and programmable V/Hz patterns
- Multi-speed settings: 5 available
- Remote speed command: 0-10 VDC or 4-20 mA, direct or reverse-acting
- Setpoint (PI) control with inverse or square root input, differential control via two feedback capability
- Feedback signal: low pass filter
- Speed command: bias and gain
- Analog outputs: Programmable, two, 0-10 VDC
- Meter Functions: Volt, amp, kilowatt, elapsed run time, speed command
- Output Current Transformers, qty 3
- NEMA 1 or NEMA 12 enclosure
- UL, cUL listed; CE marked; IEC 146
- MTBF: exceeds 28 years

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Data subject to change without notice
Yaskawa Electric America