VARIABLE SPEED PUMPING SYSTEMS
PRODUCT DATA BULLETIN

Yaskawa E7 Pulse Width Modulation AC Drive (PWM)

3-60 HP 200-240V, 3Ph, 48-63 Hz
3-200 HP 380-480V, 3Ph, 48-63 Hz

*Actual Full Load Current of motor should be used to properly size AFD.

STANDARD FEATURES

- Embedded network communications (APOGEE FLN, Metasys N2, Modbus)
- Multi-lingual/Multi-monitor LCD keypad with adjustable contrast
- Copy Function and User Setting Save Function
- H-O-A Functionality
- RJ45 Connector on H-O-A keypad for easy remote mounting
- Auto restart with adjustable time interval
- 3 skip frequencies with adjustable bandwidth
- 2 programmable analog outputs
- Loss of load monitor
- Stationary motor auto tuning
- Removable control circuit terminal strip
- Common control board across all ratings

OPTIONAL FEATURES

- LonWorks Interface Board
- 3-contactor Bypass with branch circuit protection
- NEMA 12 / NEMA 3R Enclosures

CURRENT RATINGS

HP 208/230V	AMPS
5	16.7
7.5	24.2
10	30.8
15	46.2
20	59.4
25	74.8
30	88
40	114
50	143
60	169

HP 460V	AMPS
5	7.6
7.5	11
10	14
15	21
20	27
25	34
30	40
40	52
50	65
60	77
75	96
100	124
125	156
150	180
200	240

AFD Specifications

Input Voltage	• 200-240V and 380-480V, 3Ø, 48-63 Hertz
Voltage Tolerance	• ±10%
Ambient Operating Temperature	• 0°C to 40°C
Storage Temperature	• -20°C to 70°
Ambient Humidity	• To 95% non-condensing
Altitude	• 3,300 feet above sea level without derating
Power Factor	• .98 Regardless of speed or load
Efficiency	• 97% or greater at rated load
Carrier Frequency	• 4 or 8 kHz
Adjustments	• Minimum/maximum speed • Acceleration/Deceleration • Current Limit • Critical bypass frequencies with adjustable bandwidths • Analog inputs/outputs
Drive Protection	• Phase to phase short circuit • Overtemperature • Overcurrent • Under/Over Voltage • Motor Overload (I2T)
Display	• Drive Enabled • Output Volts • Ground Fault • Over/Under voltage • Motor Speed • Power On • Motor Trip • Motor Amps • Overcurrent • Over Temperature
Analog Outputs	• Motor Current • Motor Speed
Agency Approval	• UL and cUL listed • CE labeled
Warranty	• 24 months from ship date or 18 months from start-up, Whichever occurs first. Parts, labor, travel time, and expenses.

Dimensional Drawing

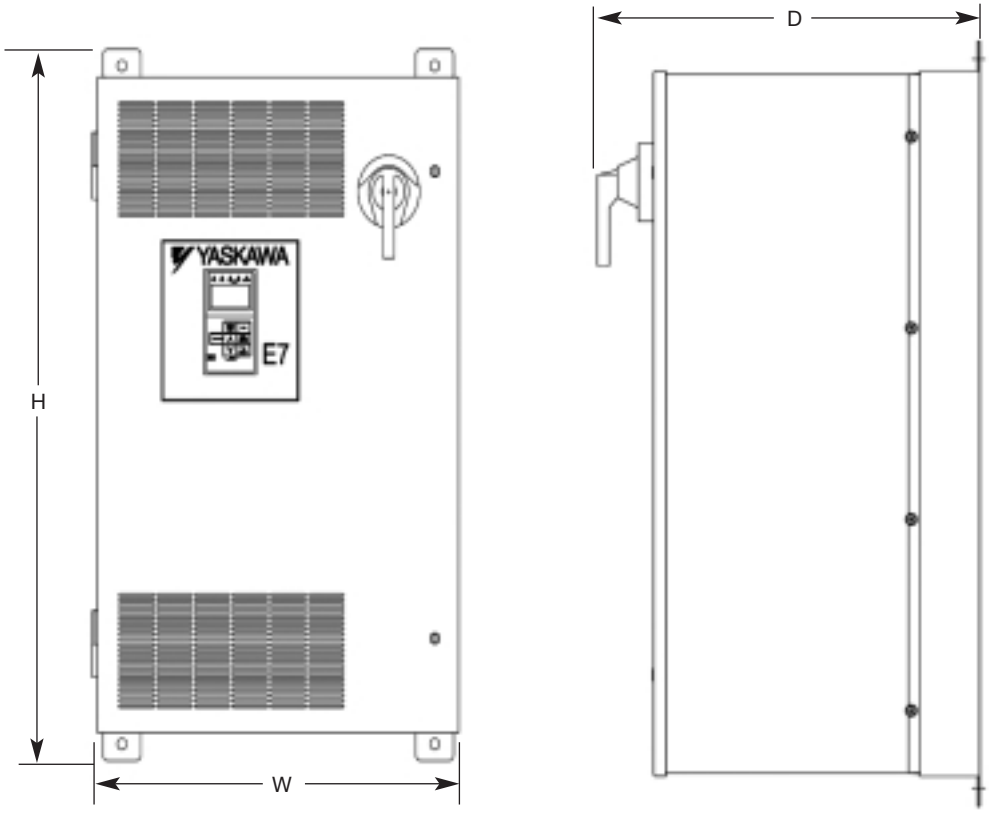
NOTE: All dimensions are approximate and in inches.

DRIVE WITH DISCONNECT

Voltage	HP	H	W	D	Drive Wt.
208-240	5-15	32.00	19.06	16.03	127
208-240	20-40	43.00	25.63	17.03	221
208-240	50-60	84.00	37.75	20.00	940
480	5-30	32.00	19.06	16.03	142
480	40-100	43.00	25.63	17.03	240
480	125-200	84.00	37.75	20.00	1200

DRIVE WITH MANUAL BYPASS

Voltage	HP	H	W	D	Drive Wt.
208-240	5-15	32.00	19.06	16.03	127
208-240	20-40	43.00	25.63	17.03	221
208-240	50-60	84.00	37.75	20.00	940
480	5-30	32.00	19.06	16.03	142
480	40-100	43.00	25.63	17.03	240
480	125-200	84.00	37.75	20.00	1200



YASKAWA E7 AFD

B. Adjustable Frequency Drive

1. The adjustable frequency drive(s) shall be pulse width modulation (PWM) type, microprocessor controlled design, AFD shall be capable of operating in voltage ranges of 200 to 240V and 380 to 480V AC, +/- 10%, three phase; at frequencies of 48 to 63 Hz. Unit shall be the Yaskawa E7 Series manufactured by Yaskawa.

2. The AFD, including all factory-installed options, shall have UL and cUL approval.

3. Enclosure shall be NEMA 1 ventilated for installation as a wall mounted or freestanding unit, depending on the amp rating. Drive shall be equipped with an input disconnect switch, padlockable in the open position for safety during maintenance, and circuit breakers to protect against ground faults.

4. An manual bypass option shall be available to enable the operator to select normal or manual bypass of the drive. The electronic bypass includes two contactors. One con-tactor is the bypass contactor that connects the motor directly to the incoming power line in the event that the drive is out of service. The other is the drive output contactor that disconnects the drive from the motor when the motor is operating in the bypass mode. The drive output contactor and the bypass contactor are electrically interlocked to prevent “back feeding.”

5. AFD shall utilize a full wave rectifier to convert three phase AC to a fixed DC voltage. Power factor shall remain above 0.98 regardless of speed or load. AFDs employing power factor correction capacitors shall not be acceptable.

6. Insulated gate bipolar transistors shall be used in the inverter section to convert to fixed DC voltage to a three phase, adjustable frequency, AC output.

7. The output switching frequency shall be selectable at 4 or 8 kHz. AFDs with an operable carrier frequency above 10 kHz shall not be acceptable.

8. An internal line reactor (3% impedance) shall be provided to lower harmonic distortion of the power line and to increase the fundamental power factor.

9. The AFD shall be suitable for elevations to 3300 feet above sea level without derating. Maximum operating ambient temperature shall not be less than 104°F. AFD shall be suitable for operation in environments up to 95% non-condensing humidity.

10. The AFD shall be capable of displaying the following information in plain English via an alphanumeric display:
    a. Output Frequency
    b. Output Voltage
    c. Motor Current
    d. Kilowatts per hour
    e. Fault identification with text
    f. Percent torque
    g. Percent power
    h. RPM

11. All AFDs shall be warranted for a period of 24 months from date of shipment or 18 months from date of start-up, whichever comes first. This warranty shall cover parts and labor expenses.

ITT Industries

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