US Drives, Inc.
2221 Niagara Falls Boulevard
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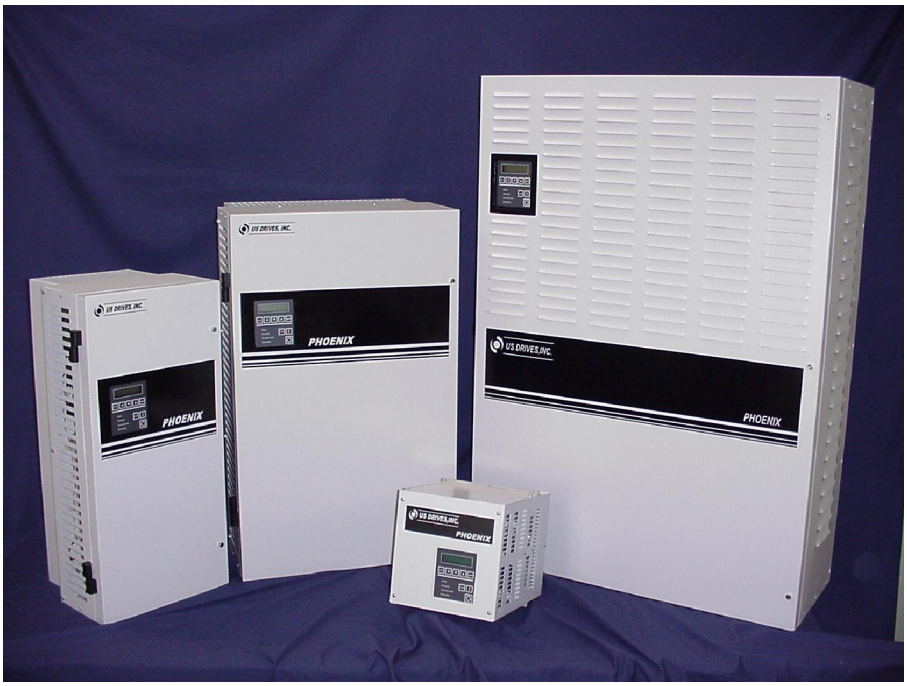
Phoenix ES Sensorless AC Vector Drive



3 HP to 3500 HP

Standard Features:

* *Open Loop AC Vector Control*
  - *100 to 1 Speed Range, 0.1% Speed Regulation - Open Loop Control (Standard)*
* *Closed Loop AC Vector Control*
  - *1000 to 1 Speed Range, 0.01% Speed Regulation - Closed Loop Control (with Encoder Feedback Card)*
  - *Speed Control, Torque Control, Speed Control with Torque Limit, Torque Control with Speed Limit*
  - *Full Torque at Zero Speed – Hold Position / Hold Zero Speed*
  - *Rigid and non-rigid position control including orientation*
  - *Permanent Magnet Motor Control*
* *No Need to Perform Auto-tune Routine or Disconnect the Motor from the Load or During Drive Start-Up*
* *Operator Keypad with English Language Display – 2 Line, 32 Character. Easily Display any parameter including Motor Speed, Motor Current, Motor Voltage, Kw and KwH. User Programmable Parameter Scaling and Formatting – Display "Real World" Values – GPM, CFM, PSI*
* *Operator Keypad Includes Speed Increase/Decrease Keys, Start/Stop, Forward/Reverse and Fault Reset Keys also LED's for "Current Limit", "Fwd/Rev", "Run" and "Fault."*
* *50°C Ambient Temperature Rating (Nema 1 Enclosed Drives)*
* *Tolerates High Input AC Line Voltages – 250/500/600 VAC +10% (240/480/575 VAC Input)*
* *Ground Fault and Line to Line Short Circuit Protection*
* *Programmable Speed Sensitive Motor Overload Protection to Comply with UL 508C Sections 43.3, 43.4 and 43.5*
* *Speed Increase / Decrease (MOP) Function*
* *S Curve Accel/Decel Control*
* *User Programmable Auto-Restart Function*
* *Bi-Directional Flycatcher (Start Into a Rotating Motor) – No Inertia Limits*
* *Built In Kw / KwH Metering and Total Cost of Power Calculator*
* *Programmable Time Based Function Generator and Programmable Threshold Detectors*
* *Programmable time delay and logic functions (AND, OR, NOR) of bit parameters, digital inputs and outputs*
* *Adding, subtracting, multiplying, dividing, ramping, limiting and/or filtering functions of parameters and analog inputs and outputs*
* *Run Time and Power on Time Countdown Timers with Alarms plus Run Time and Power on Time Totalizers*
* *Critical Speed Rejection, 3 Bands – Individually Programmable Bandwidth*
* *Auto logging Fault History - Last 10 Faults Saved in Order of Occurrence*
* *8 Digital Inputs, 24 VDC (7 Programmable Inputs and 1 Fixed Stop/Enable Input)*
* *2 Programmable Digital Outputs – Two Form C Dry Contacts rated 5 Amps at 115VAC*
* *2 Programmable Analog Input Signals, -10 VDC to +10 VDC or 4 to 20 ma*
* *2 Programmable Analog Output Signals, -10 VDC to +10 VDC*
* *DC Braking*
* *Fixed or Variable Carrier Frequency*
* *Much, Much, More..*

THREE YEAR WARRANTY

MADE IN USA

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ENGINEERING SPECIFICATIONS

CONTROL

Speed Range: Open Loop: 100:1
Closed Loop: 1000:1

Control Modes: Speed Control
Torque Control
Speed Control with Torque Limit
Torque Control with Speed Limit

Control Method: Sine coded PWM with programmable carrier.
Open Loop/Closed Loop Vector Control.

Output Voltage: 0 to input voltage

Output Frequency Range: 0 to 600 Hz.

Frequency accuracy: Analog reference: 0.1% of max frequency.
Digital reference: 0.01% of max frequency.

Frequency resolution: Analog reference: 0.06Hz at 60Hz.
Digital reference: 0.001Hz at 60Hz.

Accel / Decel: Adjustable 0.1 to 3276 sec.

Drive Overload: High Overload Capacity Drives:
150% of drive rated output for one (1) minute.
Normal Overload Capacity Drives:
120% of drive rated output for one (1) minute.

Inverse Time Overload: Programmable for class 10, 20 and 30 protection with speed sensitive protection to comply with N.E.C. Article 430.

Current limit: Proactive current limit programmable in % of motor rated current.

Braking torque: 5 to 20% without modification. Braking modules available for added braking to 150%

ELECTRICAL

Rated Input Voltage: 200-250Vac, 380-500Vac, 500-600Vac
-10% of minimum, +10% of maximum.

Rated Input Frequency: 48 to 63HZ

Number of Phases: 3

Displacement Power Factor: .95 or greater

Efficiency: 97% or greater at rated current

ENVIRONMENTAL

Ambient Temperature: -10°C to 50°C (14°F to 122°F) without derating.

Storage Temperature: -40°C to 70°C (-40°F to 158°F)

Altitude: Sea level to 3300 Feet [1000m] without derating.

Humidity: 95% relative humidity non-condensing.

Vibration: 9.8m/sec2 (1.0G) peak.

Surge Protection Line Transients to 6000V IEEE C62.41-1991 Category B

Noise Immunity: Showering Arc - 2000V Peak
EN50082 - 1, 2

Input R.F.I Filter: Standard on all models.

PHYSICAL ATTRIBUTES

Mounting: Wall Mount: Through hole or panel mount.

Nema Rating: Type 1 (IP20) as Standard
Type 12 (IP54) Optional
Type 4 (IP65) Optional

Construction: Steel Enclosure (Reduces E.M.I.)

AVAILABLE OPTIONS

- Encoder Feedback Card
- Signal Conditioners/Isolators
- Communications Cards: RS-232/422/485, Modbus RTU
- Analog Signal Conditioner/Isolation Cards
- Digital Input/Output Expansion/Conditioning Cards
- Hand/Off Auto, Local/Remote, Auto/Manual Selection
- Many Additional Modifications Available

Phoenix ES AC Drive Dimensions[1]

Input Voltage	Motor HP [2]		Nema 1 VFD Only	Nema 12 VFD Only	Nema 1 w Disconnect & Fuses	Nema 12 w Disconnect & Fuses	Nema 1 with Bypass	Nema 12 with Bypass
	High Overload Capacity[3] (HT)	Normal Overload Capacity[4] (NT)						
200 - 250 VAC (208/230/240)	3 - 7.5	5 - 10	13.05"x9.0"x10.9"	13.05"x9.0"x10.9"	20.74"x9.0"x10.9"	20.74"x9.0"x10.9"	34.02"x9.0"x10.9"	34.02"x9.0"x10.9"
	10 - 20	15 - 20	13.05"x9.0"x10.9"	13.05"x9.0"x10.9"	20.74"x9.0"x10.9"	20.74"x9.0"x10.9"	34.02"x9.0"x10.9"	34.02"x9.0"x10.9"
	25 - 30	25 - 30	25"x11.6"x11.1"	25"x11.6"x11.1"	25"x11.6"x11.1"	25"x11.6"x11.1"	38.4"x11.6"x11.1"	38.4"x11.6"x11.1"
	40 - 100	40 - 100	32.5"x20.1"x13.5"	32.5"x20.1"x13.5"	32.5"x20.1"x13.5"	32.5"x20.1"x13.5"	65"x20.1"x13.5"	60"x36"x16"
	125 - 250	125 - 250	44.2"x31.1"x16.8"	72"x36"x23.5"	86.5"x31.5"x18"	72"x36"x23.5"	72"x72"x23.5"	72"x72"x23.5"
380 - 500 VAC (380/400/415/480)	5 -15	7.5 - 20	13.05"x9.0"x10.9"	13.05"x9.0"x10.9"	20.74"x9.0"x10.9"	20.74"x9.0"x10.9"	34.02"x9.0"x10.9"	34.02"x9.0"x10.9"
	20 - 40	25 - 40	13.05"x9.0"x10.9"	13.05"x9.0"x10.9"	20.74"x9.0"x10.9"	20.74"x9.0"x10.9"	34.02"x9.0"x10.9"	34.02"x9.0"x10.9"
	50 - 60	50 - 60	25"x11.6"x11.1"	25"x11.6"x11.1"	25"x11.6"x11.1"	25"x11.6"x11.1"	38.4"x11.6"x11.1"	38.4"x11.6"x11.1"
	75 - 200	75 - 200	32.5"x20.1"x13.5"	32.5"x20.1"x13.5"	32.5"x20.1"x13.5"	32.5"x20.1"x13.5"	65"x20.1"x13.5"	60"x36"x16"
	250 - 500	250 - 500	44.2"x31.1"x16.8"	72"x36"x23.5"	86.5"x31.5"x18"	72"x36"x23.5"	72"x72"x23.5"	72"x72"x23.5"
525 - 600 VAC (525/575/600)	5 -15	7.5 - 20	13.05"x9.0"x10.9"	13.05"x9.0"x10.9"	20.74"x9.0"x10.9"	20.74"x9.0"x10.9"	24"x24"x14.2"	24"x24"x14.2"
	20 - 40	25 - 40	13.05"x9.0"x10.9"	13.05"x9.0"x10.9"	20.74"x9.0"x10.9"	20.74"x9.0"x10.9"	24"x30"x14.2"	24"x30"x14.2"
	50 - 75	50 - 75	25"x11.6"x11.1"	25"x11.6"x11.1"	25"x11.6"x11.1"	25"x11.6"x11.1"	38.4"x11.6"x11.1"	38.4"x11.6"x11.1"
	100 - 200	100 - 200	32.5"x20.1"x13.5"	32.5"x20.1"x13.5"	32.5"x20.1"x13.5"	32.5"x20.1"x13.5"	65"x20.1"x13.5"	60"x36"x16"
	250 - 600	250 - 600	44.2"x31.1"x16.8"	72"x36"x23.5"	86.5"x31.1"x18"	72"x36"x23.5"	72"x72"x23.5"	72"x72"x23.5"

(1) All Dimensions in Inches (HxWxD)
(2) Horsepower Rating based on 230, 460 and 575VAC Motors
(3) High Overload Capacity Drives produce 150% of Rated Drive Output Current for 1 minutes
(4) Normal Overload Capacity Drives produce 120% of Rated Drive Output Current for 1 minutes
(5) Consult Factory for Higher HP Drive Dimensions