



US Drives, Inc.  
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Visit us at [www.usdrivesinc.com](http://www.usdrivesinc.com)



## Phoenix DS for Oil Field Applications

The Phoenix AC drive has been designed to solve the rugged demands of Oil Field Applications: Oil Field Production, Refinery, Drilling Rigs (Mud Pump, Drawworks, Rotary Table) and Pumping Stations (PCP-Progressive Cavity Pumps, ESP-Electro Submersible Pumps, Pumping Unit/Pumpjack, PD Pump or Conventional Mechanical Pumps).

Our Phoenix AC drive with its unique DC Bus Follower circuit is the perfect product for these tough applications: Impact Loads, Eccentric or Unstable Loads (like Beam Pump and Reciprocating Pumps) can cause the AC Motor to become a part-time generator unless the drive is specifically designed to prevent this condition from occurring (Over-Voltage Trips). Most competitive AC drives are not designed to prevent this condition from occurring.

### Standard Features:

- Easy to Use, Simple Setup
- Wide Temperature Range for Tough Oil Industry Conditions
- Includes Application Specific Built-in Functions
- Works with all Induction Motors
- Over and Under Protection for Load Current
- "DC Bus Follower" eliminates Brake Chopper in Cyclic Loads
- Short Circuit and Ground Fault Protection
- Tolerate High Input Voltages
- Built in Line Voltage Surge Protection
- Motor Overload Protection, Meets NEC 430
- Built in RFI Noise Filter
- Power Dip Ride Through
- Overload Protection with Soft Stall
- Input and Output Single Phase Detection
- Momentary Power Failure Ride Through
- Dual Motor Map
- DC Injection Braking after a Controlled Stop
- Built-in Mechanical Brake Function with Torque Proving
- Torque Limits to Protect the Pump
- Works with all ESP Systems Regardless of Cable Length (with optional Sinewave Output Filter)
- Built-in DC Bus Follower (Dynamic Braking Resistors are not required for Pump Jack Oil Well Applications)



**THREE YEAR WARRANTY**

**MADE IN USA**



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## AC DRIVE PRODUCT LINE SUMMARY

DESIGN FEATURES	PHOENIX DS			PHOENIX ES			PHOENIX DS CLEAN POWER		
Drive Type	PWM - Sine Coded			PWM - Sine Coded			PWM - Sine Coded		
Control Method	Sensorless Vector			Closed Loop Vector			Sensorless Vector		
Input Rectification	6 Pulse (Standard) 12 Pulse (Optional)			6 Pulse (Standard) 12 Pulse (Optional)			18 Pulse		
Input Voltage +/- 10% Voltage +/- 2 Hz	200 to 250 3 Ph 50/60 Hz	380 to 500 3 Ph 50/60 Hz	525 to 600 3 Ph 50/60 Hz	200 to 250 3 Ph 50/60 Hz	380 to 500 3 Ph 50/60 Hz	525 to 600 3 Ph 50/60 Hz	200 to 250 3 Ph 50/60 Hz	380 to 500 3 Ph 50/60 Hz	525 to 600 3 Ph 50/60 Hz
Horsepower Range	3 to 250 (125)	5 to 3000 (250)	5 to 3500 (250)	3 to 250	5 to 3000	5 to 3500	20 to 250	40 to 1000	40 to 1000
Output Frequency	0 to 600 Hz			0 to 600 Hz			0 to 600 Hz		
Speed Regulation	0.5% of Max Speed			0.01% of Max Speed with Encoder			0.5% of Max Speed		
Speed Range	50 to 1			To Zero Speed with Encoder			50 to 1		
Overload Capability: - Normal Overload Capacity (VT) - High Overload Capacity (CT)	120% for 1 Minute 150% for 1 Minute			120% for 1 Minute 150% for 1 Minute			120% for 1 Minute 150% for 1 Minute		
Dynamic Braking	Optional - To 150% of Rated			Optional - To 150% of Rated			Optional - To 150% of Rated		
Regenerative Braking	Optional 100% Continuous 150% for 1 Minute			Optional 100% Continuous 150% for 1 Minute			Not Available		
Drive Features	<ul style="list-style-type: none"> <li>- Local Operator Keypad (can be mounted remotely)</li> <li>- English Language Display for Easy Programming</li> <li>- High Performance PID (Setpoint) Control</li> <li>- Adjustable Accel / Decel Control (to 3276 Sec)</li> <li>- 8 Preset Speeds with 16 Accel / Decel Rates</li> <li>- Scan Timer for Customized Speed Profiles</li> <li>- Speed Increase / Decrease (MOP) Function</li> <li>- Programmable S Curve Accel / Decel Control</li> <li>- Ground Fault / Short Circuit Protection</li> <li>- Fault History Log &amp; Maintenance Timers</li> <li>- Flycatcher (Start Into a Rotating Motor)</li> <li>- Critical Speed Rejection (3 Points)</li> <li>- Control Power Ride Through (approx 2 sec)</li> <li>- Kw / Kw-Hr Metering</li> <li>- Coast to Rest, Ramp Stop, and/or DC Braking</li> <li>- Programmable Threshold Detectors</li> <li>- PLC Functions: AND, OR, NOT, Timers, +, -, x, /</li> </ul>			<ul style="list-style-type: none"> <li>- Torque or Speed Control</li> <li>- Auto Restart after Power Loss and/or Fault</li> <li>- Motor Overload Protection - Meets NEC430</li> <li>- Adjustable Control Limit</li> <li>- Isolated Control Circuitry</li> <li>- Programmable V/Hz</li> <li>- Analog or Digital Speed References</li> <li>- 2 Analog Inputs (-10V to +10V or 4 to 20 ma)</li> <li>- 2 Analog Outputs (0 to 10 VDC - Programmable)</li> <li>- 8 Digital Inputs (Programmable)</li> <li>- 2 Digital Outputs (Programmable)</li> <li>- Built in RS-232 Drive Programming Port</li> <li>- Free Drive Configuration Software</li> <li>- Password Protection</li> <li>- UL and cUL Listed</li> <li>- High Input Power Factor (&gt;0.95)</li> <li>- Many, Many Other Features</li> </ul>					
Power Options	<ul style="list-style-type: none"> <li>- Input AC Line Disconnect Switch with Fuses</li> <li>- Input AC Line Circuit Breaker</li> <li>- Manual or Automatic Contactor Bypass</li> <li>- Input and Output Line Reactors</li> <li>- Input and Output Contactors</li> <li>- Many Others</li> </ul>								
Control Options	<ul style="list-style-type: none"> <li>- Communication Cards - RS-232/422/485, Modbus RTU, Ethernet, Many Others Available</li> <li>- Closed Loop Vector Control (Encoder Feedback) Card</li> <li>- I/O Expansion Card - Analog and Digital</li> <li>- Encoder Feedback and Second Encoder Follower Card (Closed Loop Vector Drives Only)</li> <li>- Process Input / Output Signal Isolation Cards (4 to 20 ma or - 10VDC to + 10VDC)</li> <li>- 115 VAC Operator (Digital Input) Interface Card</li> <li>- Operator Devices: Manual Speed Pot, Hand/Off/Auto, Local/Remote, Auto/Manual Switches</li> <li>- Many Others</li> </ul>								
Enclosures: - Nema 1 - Nema 12 - Nema 4 / 4X - Nema 3R	Standard Optional Optional Optional			Standard Optional Optional Optional			Standard Optional Optional Optional		
Surge Suppression	Line Transients to 6000 Volts - IEEE C62.41-1991 Category B								
Noise Immunity	Showering Arc to 2000 Volts Peak - EN50082-1.2								
Ambient Temperature	-10°C to 50°C (14°F to 122°F)			-10°C to 50°C (14°F to 122°F)			-10°C to 50°C (14°F to 122°F)		
Input RFI Filter	Standard			Standard			Standard		

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