



Weatherford®

ePAC™ II Variable Speed Drive for Rod Pumping



ePAC II Variable Speed Drive for Rod Pumping

The challenge in controlling rod pumping wells is to match the pumping speed to the varying production capacity of the well while protecting the system from mechanical damage.

What is needed is infinitely variable speed control with controlled torque throughout the speed range.

Weatherford meets this need with the ePAC II rod pump controller (RPC) providing precision torque and speed control to ensure that the well pumps at the required speed and torque through out the stroke.

Precision control of both speed and torque for management of rod pumped wells.

Drive Protection

- Ground fault
- Motor phase-to-phase short circuit
- AC input overvoltage
- AC input undervoltage
- Instantaneous overcurrent
- Motor overload
- Heat sink over temperature
- Power transistor fault
- Logic power undervoltage
- Inlet and outlet phase loss protection
- Motor runaway
- Memory malfunction
- Processor running fault

Interfaces

- Keypad/display
- Serial
- Portable keypad interface

The ePAC II RPC not only allows you to match the drive speed to well conditions, but also supplies the required torque to operate when fully loaded. Precision torque control also means there is no need to oversize the drive relative to the motor for pump startup.

Drive reliability requires the proper enclosure to protect the sensitive electronics from foreign material as well as extreme temperature variations. The ePAC II RPC uses an engineered package with through-hole mounting of the amplifier heat sink to both reduce the heat and the overall size of the cabinet.

The enclosure layout provides additional room for optional internal components while Type 3R protection and electrical door interlocks enhance the safety of the package.

Data Protection

- Drive keypad can archive and store the drive parameters in the event you need to transfer the information to another drive or reload the values
- PC interface software allows user to transfer drive parameters to PC for storage and reference
- Multilevel password protection allows critical drive parameters to be accessible only with a password

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Features

- Limits mechanical stress on equipment
- Reduces power consumption
- Minimizes equipment wear
- Maximum torque from zero to base speed
- High speed operation up to 120 Hz
- Flexible configuration
- Simple operation and setup
- Programmable restart function
- Package designed for all environmental conditions



Performance

- Adjustable speed eliminates need for sheave changes
- Adjustable auto restart after power loss or fault condition
- Overvoltage suppression software that eliminates the need for dynamic braking in most applications
- Low torque detection indicates a rod break
- Low speed detection
- Simple setup decreases startup time
- Reliable operation
- Configurable menu allows easy access to critical information
- Multiple readout display
- Built-in communication module
- Multi-speed control with optional position sensor for rotaflex or beam pump applications

Dimensional Data

Size	HP	Height		Width		Depth		Weight	
		in.	cm.	in.	cm.	in.	cm.	lbs.	kg.
1	5-30	36	91.44	24	60.96	18	45.72	200	90.72
2	40-50	48	121.92	24	60.96	18	45.72	240	108.86
3	60-100	48	121.92	30	76.2	18	45.72	280	127.0
4	125-150	60	152.4	36	91.44	20	50.8	350	158.76
5	200	72	182.88	42	106.68	20	50.8	440	199.58

Cost Savings

- Continuous operation eliminates inrush current
- Torque limits reduce stress on equipment
- No need for dynamic braking in most applications

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UL Listed Enclosure Packages

- Type 3R
- Engineered for all weather conditions
- Door interlocked breaker main disconnect
- Front mounted keypad and controls in secondary door
- Control transformer
- Panel mount enclosure (sizes one to three)
- Floor mount enclosure (sizes four and five)

Options

- 24 Vdc power supply for external analog signals
- Communication (Ethernet)
- Transient power protection package
- Line/load reactors
- IEEE-519 rated inlet harmonic package
- Long lead filter (DV/DT)
- Dynamic braking module for demanding applications

Specifications

Electrical Input Supply	
Three-phase voltage	230, 380, 480 Vac (+10% to 15%)
Three-phase frequency	50 to 60 Hz (±5%)
Single-phase voltage	230, 480 Vac (±10% to 15%)
Single-phase frequency	50 to 60 Hz (±5%)
Electrical Power Factor	
Displacement	1.00
Overall	0.94
Electrical Output Rating	
Voltage	Zero to input voltage, three-phase
Frequency	Zero to 120 Hz open loop vector control Zero to 300 Hz variable frequency control
Switching frequency	Programmable, 2 to 16 kHz
Overload current	110 to 120% of rated for one minute (normal duty)
Electrical Conversion	
Rectifier Unit	Six-diode, three-phase (six-pulse) full wave bridge below 40 Hp Diode-SCR, 6-phase (12-pulse) full-wave bridge for 40 Hp and above
Inverter Unit	Six-IGBT, four-quadrant, trap or sine wave output
Environmental	
Operating temperature (°F/°C)	-40 to 122 (-40 to 40)
Storage temperature (°F/°C)	-4° to 140 (-20° to 60)
Relative humidity	5% to 95%, noncondensing
Altitude	0 to 3,300 ft. (1,000 m) at full rating
Inputs and Outputs	
Analog inputs	Three 12-bit analog inputs: one 4 to 20 mA, two 0 to 10 Vdc
Pulse input	0 to 32 kHz (flow volume configurable)
Analog outputs	Two 12-bit analog outputs, 4 to 20 mA
Pulse outputs	0 to 32 kHz
Digital inputs	Eight digital inputs (requires sink of 1 mA to common)
Digital outputs	Three programmable relay outputs (1 A @ 250 Vac), one fault contact
Serial Communications	
Modbus RTU	RS422/485, 1200 to 19200 baud (STD)



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