

V P C TM

*Versatile Pump
Control System*



Flexible control

packages for

sucker-rod

artificial lifts



V P C ™ S Y S T E M



The VPC™ system is a family of packaged rod-pump controllers offering a range of solutions in a single footprint. VPC™ units are available in four versions

- *Stand alone*
- *Motor starter*
- *Soft start*
- *Variable speed*



While not part of the modular VPC™ family, the RPC Rod Pump Controller offers the same features as the Stand-Alone VPC™ controller in an economical package

Versatile

The VPC™ Versatile Pump Control system is a family of packaged rod-pump controller solutions for sucker-rod pumping (SRP) applications. From simple stand-alone start/stop control to the ultimate in variable-speed well optimization, the VPC™ system lets you choose the appropriate level of sophistication on a well-by-well basis. The system is ideal for large fields of wells of varying maturity and requirements.

Four-in-One

Each VPC™ unit can be configured for one of four controller types:

Stand Alone

Provides simple pump-off control for use with a separate motor control package.

Motor Starter

Adds an incoming circuit breaker and a motor-starter contactor for a single-box solution.

Soft Start

Uses a solid-state motor starter to extend equipment life by eliminating torque oscillations and current surges on starting.

Variable Speed

Uses a variable-speed drive (VSD) and patented SRP control software to continuously optimize production while protecting the pumping system.

Easy Upgrade

The VPC™ system grows with your requirements. Begin with a traditional pump-off controller if you wish, then upgrade to gain the advantages of Unico's industry-leading SRP control. All four VPC™ versions share a common footprint, making it easy to convert from one controller type to another by simply swapping panels. A common digital-signal-processor-based (DSP) control board and control software minimizes spare part requirements and operator training.

Works with Any SRP

The VPC™ system works with any conventional, air-balanced, beam-balanced, phased-crank, Mark II, Reverse Mark, and Rotaflex artificial lifts. It also works with Unico's innovative LRP™ linear rod pumps and CRP™ crank rod pumps when a compact, unobtrusive mechanical solution is desired. The VPC™ system operates new or existing pumping unit motors up to 50 hp.



Versatile control for sucker-rod artificial lift systems

Stand Alone



Motor Starter



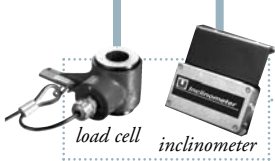
Soft Start



Variable Speed



VPC™ units feature four configurable input/outputs as standard and up to 18 using the optional I/O expansion module. Plug-in converters accommodate a wide variety of AC and DC voltages and relay contact outputs.



sensors optional

Robust

Units are designed to withstand the harsh environments of the oil patch.

Weatherproof

VPC™ components are protected inside a compact, weatherproof NEMA 4 (IP66) enclosure and are designed to operate in harsh temperature extremes.

Electrical Disturbances

VPC™ units tolerate the worst of electrical environments. They ride through line fluctuations, high-voltage transients, and other power disturbances that would normally cause costly downtime.

Electrical Demand

Small pumping units can often be operated using conventional motor starters. Solid-state starters can be

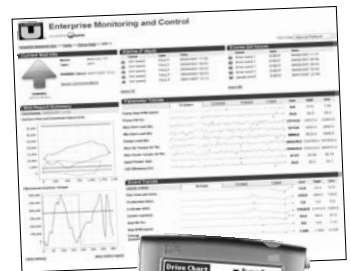
used to reduce starting currents on larger motors. Unico VSDs eliminate inrush currents and provide near-unity input power factor with relatively low harmonic distortion.

Sophisticated SRP Control

Unico's patented SRP control is the most advanced in the industry. The result of ten years of cumulative development, the SRP software offers an extensive set of features for maximizing well production, minimizing downtime, preventing equipment damage, reducing wear, and optimizing energy utilization.

Monitoring and Reporting

All four VPC™ options provide extensive monitoring and reporting capabilities, including real-time surface and downhole dynamometer plotting, gearbox torque loading, daily gauging, and more. Wireless, radio, and cellular options allow monitoring at any distance. Unico's Web-based GMC™ Enterprise Monitoring and Control system provides an efficient, cost-effective tool for staying on top of daily operations. Users can monitor comprehensive real-time and historical data for multiple fields simultaneously from virtually anywhere in the world. Units also interface to Theta and Case remote monitoring systems.



Well information is readily accessible on site or at a distance

VPC™

Versatile Pump Control System

VPC™ Feature Comparison

Type	Stand Alone	Motor Starter	Soft Start	Variable Speed	Type	Stand Alone	Motor Starter	Soft Start	Variable Speed
Hardware					Protection				
Input Supply					Motor				
24 V DC or 115/230 V AC	●				Motor current limiter			●	●
230/460 V AC		●	●	●	Motor torque limiter			●	●
Extended operating voltage range		●	●	●	Motor thermal limiter		●	●	●
Optional single-phase operation				●	Gearbox				
Environmental					Gearbox torque limiter				
Weatherproof design	●	●	●	●	Oil, belt, and gearbox service reminders	●	●	●	●
Extended operating temperature range	●	●	●	●	Stuffing Box				
External heat dissipation				●	Gas interference limiter				
Other					Tubing				
Low harmonic distortion	●	●	●	●	Rod minimum load limiter				
High power factor				●	Rod				
Mass memory option	●	●	●	●	Bridle separation limiter				
Graphic display/keypad	●	●	●	●	Rod maximum load limiter				
Integral dynamic braking control				●	Rod minimum load limiter				
Interface					Pump fill controller				
Inputs/Outputs					Rod damping controller				
Three analog inputs	●	●	●	●	Displays				
Two analog outputs	●	●	●	●	Motor				
Twelve logic inputs	●	●	●	●	Motor voltage				
Six logic outputs	●	●	●	●	Motor current				
Optional eight analog inputs	●	●	●	●	Motor speed				
Optional four analog outputs	●	●	●	●	Motor torque				
Serial Communications					Mechanical				
Wired local and remote serial ports	●	●	●	●	Gearbox torque				
Standard ANSI and Modbus RTU	●	●	●	●	Counterbalance				
Optional Modbus Plus, ControlNet, Profibus, Ethernet	●	●	●	●	Crank speed				
Bluetooth interface option	●	●	●	●	Crank angle				
MaxStream wireless radio link option	●	●	●	●	Belt slip				
Sensors					Bridle separation				
Transducerless control		●	●	●	Rod				
Rod load cell option	Required	●	●	●	Rod velocity				
Beam position inclinometer option	Required	●	●	●	Rod position				
Crank reference switch option		●	●	●	Rod load				
Tubing pressure sensor option	●	●	●	●	Pump				
Casing pressure sensor option	●	●	●	●	Pump velocity				
Control					Pump position				
General					Pump load				
Supports all SRP pump types	●	●	●	●	Suction pressure				
Embedded mathematical modeling	●	●	●	●	Discharge pressure				
Pumping system simulator	●	●	●	●	Pump fill				
Integral IEC 1131 programmable logic	●	●	●	●	Pump stroke				
Speed References					Inferred fluid production daily gauge				
Analog potentiometers				●	Leakage loss daily gauge				
Keypad/display presets				●	Average pump fill daily gauge				
Serial communications				●	Average pump speed daily gauge				
Optimization controllers				●	Well				
Speed Control					Tubing pressure				
Rotaflex racetrack cornering speed control				●	Casing pressure				
Extended motor speed control				●	Fluid level				
Speed profile control				●	Fluid flow				
Selectable up/downstroke speeds				●	Power				
Torque Control					Power meter				
Starting torque manager				●	Input power				
Gearbox torque economizer				●	Output power				
Pump Fill Control					Regenerative power				
Pump-off control	●	●	●	●	Motor power				
Pump fill optimizer				●	Rod power				
Gas interference limiter				●	Lift power				
Pump production optimizer				●	System efficiency				
Pump dwell speed control				●	Energy consumption daily gauge				
Timer controller	●	●	●	●	Graphical				
Automatic restart capability	●	●	●	●	Surface/downhole dynamometer graphs				
Cold start control				●	Predicted dynamometer graphs				
Fluid pound eliminator				●	Gearbox torque plot				
Power Control					Crank velocity plot				
Maximum power limiter				●	Rod velocity plot				
Regenerative power limiter				●	Pump velocity plot				
Power demand economizer				●	Valve check plot				
Power flow optimizer				●	Data Collection/Reporting				
Utility rate saver	●	●	●	●	Well production/performance report				
Automatic Identification					Time-stamped event and fault logging				
Adaptive pump fill trigger level	●	●	●	●	Time-stamped user-definable data sampler				
Automatic counterbalance check	●	●	●	●	Actual/as-balanced torque graphs				
Automatic pumping system identification		●	●	●	IPR curve graph				
Automatic downhole pump valve check				●	Web-based enterprise monitoring/control				
				●	Head-end software interface (Case, Theta)				

UNICO-Worldwide



Protected by United States patent 7,168,924. Other patents are pending.

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Specifications subject to change without notice.

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