Variable-Speed Drives

Summit ESP ACS®-15 Variable-Speed Drives

Summit ESP® – A Halliburton Service provides variable-speed drives (VSDs) that allow optimization of rates and efficiency of electric submersible pumping systems (ESP). By changing the frequency of incoming power to the motor, the rotating speed of the pump can be increased or decreased, thus changing the production rate and the amount of lift generated.

The Summit ESP Adaptive Control System (ACS®-15) variable-speed drives ensure the ultimate performance of your ESP or horizontal pumping system (HPS) equipment. Summit ESP ACS-15 drives are available as 6-pulse or active-front-end (AFE) topologies.

Equipped with proprietary software – which allows any part of the menu structure to be reached in three steps or less without scrolling (Tri-Tap® touchscreen) – and plug-and-play capabilities, the Summit ESP ACS-15 VSD offers:

- Reliability
- Flexibility
- Accuracy
- Equipment protection
- SCADA readiness

Our standard 6-pulse VSD is available for day-to-day applications where electrical network loading is not critical and an economical initial cost solution is desired. This choice provides equipment protection where dynamic well conditions exist, along with a built-in PWM filtered output signal to ESP equipment. Protection against output harmonics and reflected-wave phenomenon to the downhole electrical system is standard with all Summit ESP ACS-15 VSDs. Additionally, the filtered output of the drive is continuously monitored to ensure system integrity, and provides:

- Increased efficiency of the VSD unit
- Extended motor, transformer, and cable life because of lower voltage stresses, along with decreased operating temperatures of efficient sine waves
- Reduced output harmonics

Summit ESP ACS-15 VSDs come standard with rugged heavy-gauge-steel, pad-mountable NEMA 3R enclosures; reliable state-of-the-art electronics; conformal coated circuit boards; surge-protection devices; enclosure door with cam locking perimeter latches; modular construction; and a state-of-the-art cooling system. The enhanced cooling system has an isolated intake and exhaust system designed to eliminate recirculation of hot air, allowing the drive to be operated in extreme environments.

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All Summit ESP ACS®-15 drives include an intuitive full-color touchscreen operator control panel that features the specific words instead of codes, and an interface designed for simplicity.

The Summit ESP ACS drive solution provides the newest proven technology to ensure excellent performance, along with dynamic responses that help protect your assets, optimize production, reduce operating costs, and extend equipment run life.

For more critical applications, we recommend the Summit ESP ACS-15 AFE VSD. This product always meets IEEE-519 requirements under normal operating conditions, and its design can help reduce operating costs associated with power provider constraints. A power factor of .99 to unity under nearly all operating conditions is characteristic of our AFE technology, which helps contribute to increased revenue by decreasing reactive power (kVAR) requirements and reducing kilowatt consumption.

An AFE drive offers several benefits over an 18-pulse drive. Some of them are active power factor correction, active harmonic cancellation, energy savings, less field wiring (three wires in and three wires out), smaller footprint, and lower OPEX.

The Summit ESP ACS-15 AFE drive offers enhanced performance not only under ideal conditions, but also under conditions that exist in many field installations. AFE drives employ active cancellation to compensate for harmonics generated by nonlinear current of the drive at any given moment. This is accomplished in the same way as noise-canceling headphones. The harmonics are read at the input, and an equal but opposite waveform is injected. This effectively reduces the harmonics to specified levels or below, regardless of typical imbalances in input voltage.

More and more electric companies are not only charging their commercial accounts on the basis of kilowatt hours used, but are also charging penalties on power factors (reactive power) and peak demand. Reactive power (or kVAR) is actual current flow in the system that cannot be used by electrical equipment. Although kVAR is unusable, the system is still required to carry this additional current load, thus requiring larger transmission wires and transformers throughout the system. A reduced power factor increases the cost for utilities to supply power. Likewise, peak demand requires the utility to provide the capability to meet that peak demand, even though the normal demand for power may be much less.

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The Summit ESP Adaptive Control System® (ACS®-15) variable-speed drives ensure the ultimate performance of your ESP or horizontal pumping system (HPS) equipment. Summit ESP ACS-15 drives are available as 6-pulse or active-front-end (AFE) topologies.

Summit ESP® Variable-Speed Drives

Weather-Proof Enclosure, NEMA 3R, Tri-Tap® Touchscreen

Model	KVA	Current	Height		Width		Depth		Weight	
		Amps	in.	cm	in.	cm	in.	cm	lb	kg
AFE	141	170	88	223.8	36	93.7	16	40.6	1,800	816
AFE	170	205	92.61	228.6	40.5	102.9	30	76.2	2,270	1,030
AFE	217	261	92.61	235.2	40.5	102.9	30	76.2	2,436	1,105
AFE	249	300	92.61	235.2	40.5	102.9	30	76.2	2,436	1,105
AFE	319	385	92.61	235.2	40.5	102.9	30	76.2	2,550	1,157
AFE	382	460	92.61	235.2	40.5	102.9	30	76.2	2,772	1,257
AFE	432	520	92.61	235.2	40.5	102.9	30	76.2	2,750	1,247
AFE	490	520	92.61	235.2	40.5	102.9	30	76.2	3,900	1,769
AFE	540	650	92.61	235.2	105.26	267.4	38.6	98.1	4,600	2,087
AFE	606	730	92.61	235.2	80.9	205.5	30	76.2	5,000	2,268
AFE	680	820	92.61	235.2	80.9	205.5	30	76.2	6,000	2,722
AFE	763	920	92.61	235.2	80.9	205.5	30	76.2	6,150	2,790
AFE	855	1,030	92.8	235.7	163.22	414.6	45.06	114.5	6,400	2,903
AFE	954	1,150	92.8	235.7	163.22	414.6	45.06	114.5	6,900	3,130
AFE	1,080	1,300	92.8	235.7	163.22	414.6	45.06	114.5	7,300	3,311

*Contact your sales representative

Note: VSD weights and dimensions are estimates only and not for construction use.
Some VSDs offered are non Summit ESP ACS®-15

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Weather-Proof Enclosure, NEMA 3R, Tri-Tap® Touchscreen

Model	KVA	Current	Height		Width		Depth		Weight	
		Amps	in.	cm	in.	cm	in.	cm	lb	kg
6-pulse	51	61	82	208	24	61	12	31	550	250
6-pulse	72	87	74	188	48	122	40	102	400	181.5
6-pulse	116	140	88	223.8	36	93.7	16	40.6	960	435
6-pulse	141	170	88	223.8	36	93.7	16	40.6	1584	718
6-pulse	170	205	88	223.8	36	93.7	16	40.6	880	399
6-pulse	217	261	92.61	235.2	40.5	102.9	30	76.2	1850	839
6-pulse	249	300	92.61	235.2	40.5	102.9	30	76.2	2,300	1148
6-pulse	319	385	92.61	235.2	40.5	102.9	30	76.2	2,000	907
6-pulse	382	460	92.61	235.2	40.5	102.9	30	76.2	1,900	862
6-pulse	432	520	92.61	235.2	40.5	102.9	30	76.2	2,200	998
6-pulse	490	590	92.61	235.2	40.5	102.9	30	76.2	2,000	908
6-pulse	540	650	92.61	235.2	40.5	102.9	30	76.2	2,500	1,135
6-pulse	606	730	92.61	235.2	40.5	102.9	30	76.2	4,000	1,814
6-pulse	680	820	92.61	235.2	40.5	102.9	30	76.2	4,125	1,873
6-pulse	763	920	92.61	235.2	40.5	102.9	30	76.2	4,200	1,905
6-pulse	855	1,030	92.61	235.2	92.61	235.2	80.9	205	4,600	2,087
6-pulse	954	1,150	92.61	235	80.9	205	30	76	4,800	2,177
6-pulse	1,080	1,300	89.59	228	123	312	45.06	114	6,400	2,903

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