

SpeedStar 519 SWD

18-pulse, low-voltage sine wave variable speed drive

APPLICATIONS

- ESP operations
- Surface pumping operations

BENEFITS

- Increases power efficiencies
- Reduces harmonic reflection on supply power system
- Prolongs run life of electrical systems
- Lowers operating and installation costs
- Reduces overall footprint
- Protects against lightning strikes and voltage surges
- Simplifies installation with three-wire input and three-wire output

FEATURES

- No external phase shifting transformer requirement; direct replacement for existing 6-pulse installations
- TUV third-party-certified IP-56 enclosure
- IEEE 519-compliant variable-speed drive (VSD)
- Integral phase-shifting auto transformer
- Near unity power factor throughout all ESP speed and load ranges
- Output harmonic mitigation
- Speed control to maintain constant load or pressure
- Smooth restart of a spinning motor
- Rocking start for pumps stuck because of sanding or scaling
- Load-side, phase-to-phase, short-circuit protection
- StarShield* transient voltage surge suppressor for protection against lightning strikes and voltage surges
- Sine wave output filter

The SpeedStar 519 SWD* 18-pulse low-voltage sine wave VSD features the integral output sine wave drive (SWD) technology for operating ESPs and surface pumps and meets IEEE 519 1992 guidelines. Many engineering consulting firms consider this design to be the most effective and reliable because it virtually eliminates harmonic distortion reflected back to the power system and provides clean power to the downstream device.



The SpeedStar 519 SWD VSD combines integral output sine wave technology and meets IEEE 519 guidelines.

SpeedStar 519 SWD

Input harmonics

The drive system is fitted with an innovative phase-shifting auto transformer that enables

- reducing the harmonic distortion reflected back to the power system within IEEE 519 limits
- improving electrical power system efficiency and utilization.

Typical low-voltage systems reflect back up to 25% current harmonic distortion. The SpeedStar 519 SWD VSD effectively reduces the amount of current harmonic distortion on the power system typically by 80%, virtually eliminating the harmonic reflection back to the power system. The reduction in harmonic content dramatically improves the efficiency and usability of the electrical power system. The drive also features a third-party-certified IP-56 enclosure that meets strict standards for water and dust ingress in harsh conditions.

SpeedStar 519 SWD VSD Specifications

Control system	Flux-vector PWM, V/Hz control
Input supply	380/415/480 V \pm 10%, 50/60 Hz \pm 2 Hz
Output voltage regulation	Same as power supply
Frequency setting	0.01 to 90 Hz, 0.01-Hz resolution
Non-SWD (PWM)	0.5 to 3.0 kHz (user adjustable) carrier frequency
Sine wave drive VSD	2.2-kHz carrier frequency fixed
Input configuration	18-pulse integral phase shift transformer with diode front end
Inverter efficiency	> 97% at full load
Power factor	> 0.98 at full load
Overload rating	120% for 120 s; 100% continuous
Certification and standards	UL-508 pending

SpeedStar 519 SWD VSD Enclosure and Environmental Ratings

Enclosure rating	NEMA 1 (indoor) [†] or NEMA 3R (outdoor) or IP-56 (optional)
Electronic section	Sealed from outside air and cooled by heat exchanger
Transformer section	Forced air cooled (automatic internal and external fans)
Maximum altitude, ft [m]	4,921 [1,500] above sea level; output rating derated above maximum altitude
Ambient operating temperature, degF [degC]	-22 to 122 [-30 to 50]; output rating derated above upper temperature
Ambient storage temperature, degF [degC]	-40 to 140 [-40 to 60]
Relative humidity	20 to 95% maximum (noncondensing)
H ₂ S protection	Uses conformal coated circuit boards and tin-plated bus bars
Material	12-gauge carbon steel enclosure [‡]

[†] Dimensions and specifications provided on request

[‡] Stainless steel provided on request

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