

FixStar

Schlumberger

Fixed-speed drives

The FixStar fixed-speed drive model 3900 is equipped with a UniConn* universal site controller. External view of the FixStar model 3900 with the optional site communication box (SCB).*



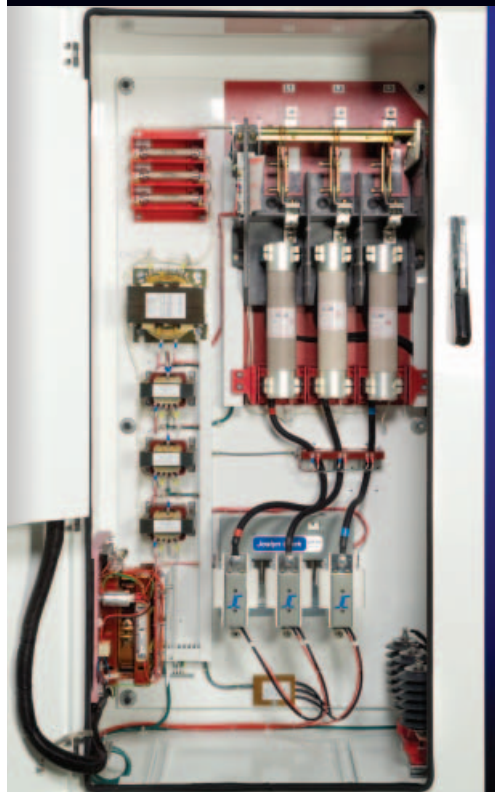
The FixStar family provides electrical submersible pump (ESP) operators with electrical system protection for downhole ESP systems in a fixed-speed application. It also provides an effective platform for analyzing well and pump performance in real time.

The modular FixStar drive is a proven protection system for an ESP operating in a fixed-speed application. It incorporates a combination of a fused main disconnect switch (or circuit breaker) with a vacuum (or air-break) contactor that connects ESP systems to the surface power supply. This provides maximum protection for the ESP system in case of major surface or downhole

electrical system faults. Built-in lightning arresters protect the downhole pump system from spikes in the supply system caused by lightning strikes. A control potential transformer provides power for all instruments housed in the FixStar enclosure. All the above-mentioned components are mounted in a high-voltage compartment. To provide better protection for field operators, the UniConn controller is located in a low-voltage compartment that is isolated from the high-voltage compartment.

The UniConn controller in the FixStar drive provides extensive electrical system monitoring and protection against both surface and downhole electrical faults. The current transformer in the UniConn controller,

Internal view of high-voltage compartment with optional three-phase choke.



Applications

- Fixed-speed ESP installations

Benefits

- Safety features provide protection for service personnel.
- A wide operating range means greater flexibility of input voltages.
- Extensive electrical system monitoring and fault protection capabilities protect equipment from damage.
- System simplifies data gathering, and remote monitoring and control of ESP.

Features

- Separate low- and high-voltage compartments
- Main disconnect switch (circuit breaker) with fuse and vacuum (air-break) contactor
- Multitap control potential transformer
- UniConn controller
- True rms three-phase current measurement and protection
- Three-phase direct-measured voltage monitoring and protection available
- Backspin and leg ground protection available

Internal view of the FixStar model 3900's low-voltage compartment with optional espWatcher* transceiver.



together with its burden module, provides true rms and high-resolution three-phase current monitoring. The three instrument-potential transformers provide directly measured three-phase voltages and the optional A095 backspin shunt provides backspin and leg ground protection.

Additionally, the FixStar drive is a platform for gathering data, remote monitoring, and controlling ESP operations when the UniConn controller's expandable functionality is used. All wellsite surface instruments required for

- running Phoenix* artificial lift monitoring systems
- using the espWatcher remote surveillance and control system
- monitoring and controlling remotely with SCADA and other applications

can now be fully housed in the FixStar drive's enclosure. This provides a compact and simple solution. The specially designed low-voltage compartment can house the SCB for the espWatcher service and the Phoenix gauge three-phase choke. Also, the high-voltage compartment can house a modified three-phase choke used with Phoenix gauges.

Other optional instruments that can be installed with a FixStar drive include

- Bristol chart recorder
- pilot light set
- 24-V DC battery pack.

These optional instruments allow the UniConn controller to gather data during power outages. All the FixStar drive options can be preassembled in the factory or assembled in the field.

FixStar Specifications

Model	Voltage Rating, V	Current Rating, A	Dimensions, mm [in]	Weight, kg [lbm]	Power Rating, kVA
5000	5,000	70, 130, 170, 200	1981.2 × 914.4 × 609.6 [78 × 36 × 24]	498.9 [1,100]	606, 1,126, 5,000
3900	3,900	70, 130, 170, 200	1981.2 × 914.4 × 609.6 [78 × 36 × 24]	498.9 [1,100]	473, 878, 1,148, 1,351
3300	3,300	70, 130, 170, 200	1981.2 × 914.4 × 609.6 [78 × 36 × 24]	498.9 [1,100]	400, 743, 972, 1,143
1500	1,500	60, 100, 125, 150, 200	1778.0 × 762.0 × 558.8 [70 × 30 × 22]	249.4 [550]	156, 260, 325, 390, 520
600	600	45, 90, 135	1066.8 × 711.2 × 355.6 [42 × 28 × 14]	113.4 [250]	47, 94, 140

FixStar Main Components^{†,‡}

- Main disconnect switch (circuit breaker for 600-V models)—1 each
- Vacuum contactor (air-break contactor for 600-V, 45-, 90-, 135-A models)—1 each
- Multitap control power transformer (750 VA for 600-V models, 1 kVA for all other models)—1 each
- Lightning arrester—3 each
- Fixed speed controller—1 each
- Current module with burden module—1 set

[†] All have operating temperature ratings of -40 to 75 degC [-40 to 131 degF] and storage ratings of -60 to 70 degC [-40 to 158 degF].

[‡] All have NEMA 3/3R enclosure ratings.

FixStar Optional Components[§]

- Instrument potential transformer—3 each
- A095 backspin shunt—1 each
- Phoenix interface kit (UniConn Phoenix card, 3-phase choke and wiring)^{††}
- espWatcher interface kit (internal SCB, UniConn SCADA card and wiring)^{††}
- Bristol chart recorder kit[†], pilot light kit[†], 24-V DC battery pack

[§] All have NEMA 4/4 enclosure ratings.

^{††} Available as factory or field-installed kits.

www.slb.com/oilfield