

## FixStar

### Fixed speed drives

#### APPLICATIONS

- Fixed-speed ESP installations

#### BENEFITS

- Increases safety for personnel
- Reduces maintenance costs

#### FEATURES

- Simplified data gathering and remote monitoring and control of ESPs
- Wide operating range for greater input voltage flexibility
- Fault and equipment protection from built-in safety features
- Main disconnect that isolates personnel from the high voltage
- Separate low- and high-voltage compartments
- Fused main disconnect switch (circuit breaker) with fuse and vacuum (air-break) contactor
- Multitap control potential transformer
- UniConn\* universal site controller
- True root-mean-square (rms) three-phase current measurement
- Optional three-phase, direct-measured voltage monitoring
- Backspin shunt and leg ground protection

FixStar\* fixed speed drives provide electrical system protection for downhole ESP systems in fixed speed applications. It also provides an effective platform for analyzing well and pump performance in real time. When the UniConn controller's expandable functionality and SCADA enhancements are used, the FixStar drive gathers data, monitors remotely, and controls ESP operations.

The modular FixStar drive incorporates a fused main disconnect switch (circuit breaker) and a vacuum (air-break) contactor that connects ESP systems to the surface power supply. This design provides maximum protection for the ESP system in case of major surface or downhole electrical system faults. Built-in lightning arresters protect the ESP system from spikes in the power supply caused by lightning strikes. A control potential transformer provides power for all instruments housed in the FixStar drive enclosure.

The UniConn controller is located in a separate low-voltage compartment isolated from the high-voltage compartment that houses the drive components. The UniConn controller provides extensive electrical system monitoring and protection against both surface and downhole electrical faults. The current transformer in the UniConn controller, together with its burden module, provides true rms three-phase current monitoring. Three instrument-potential transformers provide directly measured three-phase voltages. The optional A095 backspin shunt provides backspin and leg ground protection.

Some FixStar drive models have a factory-installed Phoenix\* artificial lift downhole monitoring systems' gauge surface choke housed in the high-voltage compartment. This arrangement results in a simple, compact unit with reduced footprint. Optionally, a field-installed choke can be used. All FixStar drive options, including a Bristol chart recorder and pilot light set, can be preassembled at the factory or assembled in the field. For most applications, the FixStar drive is compatible with the wellsite surface instruments required to interface with the Phoenix system gauges and the LiftWatcher\* real-time surveillance service.



*3900-V FixStar drive low-voltage compartment equipped with UniConn controller.*

## FixStar Fixed Speed Drive Specifications

Model	5000	3900	3300	1500	480
Voltage rating, V	5,000	3,900	3,300	1,500	480
Current rating, A	70; 130; 170; 200	70; 130; 170; 200	70; 130; 170; 200	70; 130; 170; 200	45; 90; 135
Frequency, Hz	50/60	50/60	50/60	50/60	50/60
Dimensions H × W × D, in [mm]	81 × 39 × 30.75 [2,060 × 995 × 785]	81 × 39 × 30.75 [2,060 × 995 × 785]	81 × 39 × 30.75 [2,060 × 995 × 785]	81 × 39 × 30.75 [2,060 × 995 × 785]	42 × 31 × 19.5 [1,070 × 790 × 500]
Weight, lbm [kg]	1,100 [500]	1,100 [500]	1,100 [500]	1,100 [500]	250 [115]
Operating temperature, degF [degC]	-40 to 122 [-40 to 50]	-40 to 122 [-40 to 50]			
Storage temperature, degF [degC]	-58 to 158 [-50 to 70]	-58 to 158 [-50 to 70]			
Certification	CE†	CE	CE	CE	
Power rating, kVA	606; 1,126; 1,472; 1,732	473; 878; 1,148; 1,351	400; 743; 972; 1,143	182; 338; 442; 520	37; 75; 112

†CE-89/336/EC (EMC Directive).



3900-V FixStar drive high-voltage compartment.



3900-V FixStar drive low-voltage compartment.

## FixStar Drive Main Components

Main disconnect switch† (circuit breaker†,‡ for 480 V models)—1

Power fuses‡ (circuit breaker†,‡ for 480 V models)

Vacuum contactor†,‡ (air-break contactor†,‡ for 480 V models)—1

Multitap control power transformer (750 VA for 480 V models, 1 kVA for all other models)—1

Lightning arrestors—3

UniConn fixed speed controller†—1

Three current transformers (CTs) with CT burden module—1 set

A095 backspin shunt—1

CSA-type 3R enclosure

† CSA certification.

‡ UL certification.

## FixStar Optional Components

Instrument potential transformers—3

Phoenix system interface kit (UniConn controller Phoenix system card, three-phase choke and wiring)†

LiftWatcher service interface kit (SCB, UniConn controller SCADA card, Phoenix system interface card (PIC) and wiring)†

Bristol chart recorder kit†

Pilot light kit†

†Available as factory- or field-installed kits.