

Zenith E-Series ESP gauge

Prolong ESP runlife and enhance oil recovery

Applications

ESP well production operations

Features and benefits

- Optimizes uptime, runlife, pump performance and oil production
- Reduces operating costs
- Protects ESP lift system equipment
- High-quality, modular construction
- Allows repeated deployment
- Simplifies maintenance and reduces related costs being field-serviceable
- Allows cable megger test
- Collects downhole data
 - Simplifies data transfer to removable SD memory card
 - Displays live data, on-screen charting, drive mounted or enclosure
 - Includes data trending software
 - Provides dedicated engineers' port
 - Connects to remote data collection or supervisory control and data acquisition (SCADA) systems

The **Zenith™ E-Series gauge** provides reliable downhole monitoring of electrical submersible pump (ESP) operations. Accurate measurements sent to the surface in real time enable fast, appropriate, and confident assessment of well and artificial lift system performance.

The E-Series gauge is available in multiple specifications to suit the application and economic impact of deploying a monitoring system on your ESP.

The gauge is installed below an ESP motor using a flange connection and

connected electrically to the wye point of the motor—a motor base crossover may be required for some ESP manufacturer motors. E7 and E8 systems include a discharge pressure assembly installed above the pump and a ¼-in. hydraulic line connecting pump discharge pressure to the transducer in the gauge. The E8 gauge also requires an electrical control line run the full length of the ESP.

All E-Series gauges are calibrated during manufacture and retain calibration on board—no requirement for a dedicated key at the surface.

Construction

Material	13-chrome metalwork as standard
Seals	Aflas
Max. working pressure	5,800 / 10,000 psi (400 bar / 690 bar)
Temperature rating	302°F (150°C) / 347°F (175°C)
Make up length	E6/E7: 2.6 ft (79.25 cm) E8: 4.2 ft (128.02 cm)
Outside diameter	4.5 x 3.75 x 3.19 in. (11.43 x 9.53 x 8.10 cm)

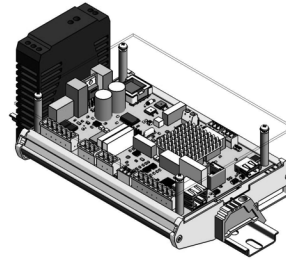
Measurement	E6	E7	E8	Range	Resolution	Accuracy	Data Rate
Pump intake pressure	●	●	●	0 to 5,800 / 10,000 psi (400/690 bar)	0.1 psi (0.007 bar)	0.1%	5 s (1 s option)
Pump discharge pressure	-	●	●	0 to 5,800 / 10,000 psi (400/690 bar)	0.1 psi (0.007 bar)	0.1%	25 sec
Intake temperature – std	●	●	●	0 to 302°F (0 to 150°C)	0.18°F (0.1°C)	1.8°F (1°C)	25 sec
Intake temperature – high	○	○	○	0 to 347°F (0 to 175°C)	0.18°F (0.1°C)	1.8°F (1°C)	25 sec
Discharge temperature	-	-	●	0 to 482°F (0 to 250°C)	0.18°F (0.1°C)	4.5°F (2.5°C)	65 sec
Motor winding temperature	●	●	●	0 to 482°F (0 to 250°C)	0.18°F (0.1°C)	4.5°F (2.5°C)	25 sec
Vibration – x and z axes	●	●	●	0-10 g	0.003 g	1.0%	25 sec
Current leakage	●	●	●	0-20 mA	0.001 mA	0.05%	25 sec
Wye point voltage	-	○	○	5-700 V	0.1 V	0.5%	65 sec

● Parameter included as a standard | ○ Optional alternative or additional parameter

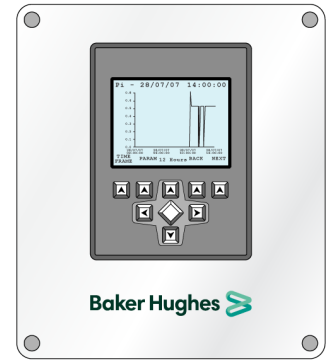
Surface data acquisition options

- Zenith interface unit (ZIU) interfaces the gauge signal to a RS232 or RS485 Modbus output for use on a drive or SCADA remote terminal unit.
- Zenith surface panel (ZSP) provides on-screen data charting, alarms and trips, analogue and data (Modbus) communication signals.

Zenith gauges are also available as part of Baker Hughes's **Sabio™ ProductionLink™ artificial lift monitoring solutions**, applying the power of the industrial internet to help operators visualize well, field, and operation-wide data for smart deployment of resources and decision-making to predict issues with lift systems, optimize production, and reduce operating costs.



Zenith surface interface unit (ZIU)



Zenith surface panel (ZSP)

Surface equipment	Ref. no.	Details
ZIU	14460227000	Input: E-Series gauge signal, Outputs: Data logger, RS232/RS485 Modbus RTU, analogue 4–20 mA, trip relay
ZSP for E-Series gauges (400 bar)	14460110002	Input: E-Series gauge signal, Outputs: Data logger, RS232/RS485 Modbus RTU, analogue 4–20 mA, trip relay, display
ZSP for E-Series gauges (690 bar / E8)	14460286002	Input: E-Series gauge signal, Outputs: Data logger, RS232/RS485 Modbus RTU, analogue 4–20 mA, trip relay, display
ZSP for E-Series with 1-sec mapping for intake pressure	14460110016	Input: E-Series gauge signal, Outputs: Data logger, RS232/RS485 Modbus RTU, analogue 4–20 mA, trip relay, display
ZSP cable pack	14460003000	Input power, Modbus, analogue, trip relay, high voltage, signal and earth cables
Zenith surface choke	14460052000	3 x high voltage terminals (ESP cable), 2 x low voltage spade terminals (ZIU/ZSP), 8mm grounding point

Downhole equipment	Ref. no.	Details
ESP motor winding hook up kit	13460414803	HV boot connector kit, 2 x LV boot connectors and 4.56 'O' ring, 10 in. thermocouple
ESP motor winding hook up kit - slimline	13460415803	HV boot connector kit, 2 x LV boot connectors and 3.75 'O' ring, 10 in. thermocouple
E7 discharge pressure assembly	See Zenith discharge pressure assembly specification sheet	
E8 discharge sub	11480051402	3-½ in. 9.2# VAM TOP Box x Pin
E8 discharge temperature line	13450434403	160 ft (48.77-m) ¼ in. line with cable head
	13450437403	200 ft (60.96-m) ¼ in. line with cable head
Discharge pressure line	10460001406	160 ft (48.77-m) ¼ in. line (other lengths available)



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