

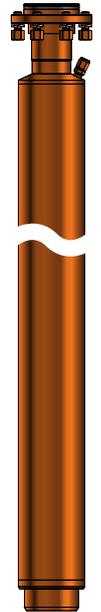


Zenith[®] E-Series ESP Gauges

A Zenith E-Series gauge is installed below an ESP motor using a flange connection. The gauge is connected electrically to the Wye point of the motor. A motor base crossover may be required for some ESP manufacturer motors.

Gauges are calibrated during manufacture and retain calibration on board - no requirement for dedicated key at surface.

The E-Series gauge is available in multiple specifications to suit the application and economic impact of deploying a monitoring system on your ESP - see details below. Ground fault immune gauges also available - further information available on request.



Construction

Material	13-chrome metalwork as standard
Max working pressure	5,800psi
Temperature rating	150°C / 175°C
Make up length	2.6ft
Outside diameter	4.5in / 3.75in slimline option

Measurement	E4	E6	E7	E7+	E8	E8+	Units	Range	Resolution	Accuracy	Data Rate
Primary Parameters for essential pump and well surveillance and protection											
pump intake pressure	●	●	●	●	●	●	psi/bar	0-5,800psi	0.1 psi	0.1%	5s (1s option)
pump discharge pressure			●	●	●	●	psi/bar	0-5,800psi	0.1 psi	0.1%	25s
intake temperature - standard temp	●	●	●	●	●	●	°C/°F	0-150°C	0.1°C	1°C	25s
intake temperature - high temp		○	○	○	○	○	°C/°F	0-175°C	0.1°C	1°C	25s
discharge temperature					●	●	°C/°F	0-250°C	0.1°C	1°C	25s
motor oil / motor winding temperature	●	●	●	●	●	●	°C/°F	0-250°C	0.1°C	1°C	25s
vibration - x axis		●	●	●	●	●	G	0-10G	0.003G	1.0%	25s
vibration - y axis		●	●	●	●	●	G	0-10G	0.003G	1.0%	25s
Predictive Parameters for preventative maintenance and effective workover management											
current leakage	●	●	●	●	●	●	mA	0-20mA	0.001mA	0.05%	25s
wye point voltage			○	○	○	○	V	5-700V	0.1V	0.5%	50s
Intelligent Parameters for advanced well and field management and optimisation											
bottom hole flowing pressure*	○	○	○	●	○	●	psi/bar				25s
fluid level above pump*	○	○	○	●	○	●	ft/m				25s
wellhead pressure				●		●	bar/psi	0-1,700psi	0.1psi	0.2%	25s
total liquid flow rate*				●		●	stb/d				25s
water cut*				●		●	%				25s
real time pump curve & live op point*				●		●	-	-	-	-	25s

● parameter included as standard | ○ optional alternative or additional parameter | *calculated parameter

System features

High quality, modular construction

Long service life allowing repeated deployment

Field-serviceable system

Downhole data collection

SD card — simple data transfer to removable memory card

Data display with live on-screen data charting, drive mounted or enclosure

Data trending software

Dedicated engineers' port

Connectivity to remote data collection or SCADA systems

Allows cable megger test

Surface data acquisition

- 1. 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.
- 2. Zenith Surface Panel (ZSP)** provides on-screen data charting, alarms and trips, analogue and data (Modbus) communication signals.
- 3. Zenith Surface Panel Plus (ZSP+)** available with E7 and E8 gauges to create the E7+/E8+ systems; colour touch screen display, well information presented in simple dial format, live and historical data trending, ESP pump curve with real time operating point, virtual well test (flow, water cut, BHFP), auto alarm setting for Pi, Pd, BHFP, WHP, Tm, pump flow, pump head, lockable display cover.

Zenith gauges are also available as part of GE's Field Vantage solution, 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 — predict issues with lift systems, optimize production and reduce operating costs.

Surface Equipment	Ref. No.	Details
ZIU	14460097000	Input: E-Series gauge signal Output: RS485 Modbus RTU
	14460227000	Input: E-Series gauge signal Outputs: Data logger, RS232/RS485 Modbus RTU, analogue 4-20mA, trip relay
ZSP	14460110002	Input: E-Series gauge signal Outputs: Data logger, display, RS232/RS485 Modbus RTU, analogue 4-20mA, trip relay
ZSP+	14450024421	Input: E-Series gauge signal Outputs: Data logger, display, RS232/RS485 Modbus RTU, analogue & digital, USB, ethernet, trip relay, 434 receiver
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 oil hook up kit	13460056000	HV boot connector kit and 'O' ring
ESP motor oil hook-up kit - slimline	13460084000	HV boot connector kit and 375 'O' ring
ESP motor winding hook-up kit	13460086000	HV boot connector kit, 2 x LV boot connectors and 'O' ring
ESP motor winding hook-up kit - slimline	13460089000	HV boot connector kit, 2 x LV boot connectors and 375 'O' ring