

DataSphere® Opsis™ Permanent Downhole Gauges

RELIABLE, REAL-TIME MONITORING OF DOWNHOLE CONDITIONS

OVERVIEW

In today's challenging environments, there is an increasing need for reliable and accurate reservoir data, driving the need for continuous improvement of monitoring technology. Opsis™ permanent downhole gauges are the latest addition to the DataSphere® permanent monitoring suite, providing real-time downhole data for increased productivity throughout the life of the well.

Opsis gauges feature ASIC (Application Specific Integrated Circuit) technology in combination with field-proven resonating quartz crystal sensors. The result is highly accurate pressure and temperature measurements, even under extreme temperature conditions.

Opsis gauges can be used for single or multi-zone monitoring applications. These gauges may be ported to tubing, annulus, or control line. The addition of feed-through or splitter block assemblies enables the monitoring of multiple zones.

APPLICATIONS

- » Life of the well production monitoring
- » Life of the field reservoir monitoring
- » SmartWell® completion system optimization
- » Artificial lift optimization

GAUGE DESIGNS

- » Quartz transducer
- » ASIC technology
- » Maximum 200°C operating temperature
- » 0.75-in OD slim line design
- » Improved shock and vibration performance

FMJ CABLE TERMINATION

Opsis gauges use a high performance cable termination with a sealing arrangement based on our highly reliable intelligent completion FMJ connector. This cable termination incorporates a pressure-testable dual metal-to-metal ferrule seal arrangement for isolating the downhole cable outer metal sheath from the well fluid.

FEATURES

- » ASIC hybrid electronics qualified to 200°C
- » Demonstrated downhole gauge reliability 10 years @185°C
- » Onboard intelligent gauge diagnostics
- » Bellows to isolate quartz crystal from well fluids
- » Designed for harsh environments up to 30,000 psi and 200°C
- » Extensive qualification testing performed
- » Simplified system with multiple sensor options
- » Field-testable dual metal-to-metal seal
- » Fault-tolerance features for maximum reliability

BENEFITS

- » Continuous pressure and temperature data without the need for well intervention
- » Enhanced reservoir management
- » Increased system reliability using stable pressure/temperature measurements
- » Quartz-based sensor for high accuracy, low drift



HAL124094

TESTING

Opsis gauges are tested to the full pressure and temperature rating during Factory Acceptance Testing (FAT), and each gauge comes with an independently checked calibration certificate.

New gauge designs are subjected to Reliability Demonstration Testing (RDT) per AWES Recommended Practices.




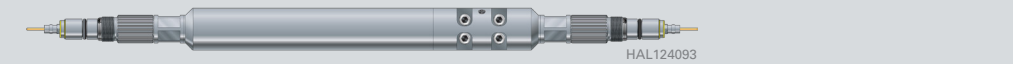

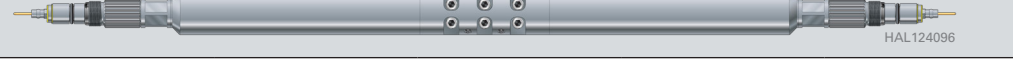
Opsis™ Gauge Temperature Performance

Accuracy (°C)	0.5
Typical Accuracy (°C)	0.15
Achievable Resolution (°C/sec)	<0.005
Repeatability (°C)	<0.01
Drift at 177°C (°C/year)	<0.1

Opsis™ Gauge Pressure Performance

Pressure Range (psi / bar)	0 to 10,000 0 to 690	0 to 16,000 0 to 1,100	0 to 20,000 0 to 1,380	0 to 25,000 0 to 1,725	0 to 30,000 0 to 2070
Accuracy (% FS) (psi)	0.015 (1.5)	0.02 (3.2)	0.02 (4.0)	0.02 (5.0)	0.025 (7.5)
Typical Accuracy (% FS) (psi)	0.012 (1.2)	0.015 (2.4)	0.015 (3.0)	0.015 (3.75)	0.02 (6.0)
Achievable Resolution (psi/sec)	<0.006	<0.008	<0.008	<0.010	<0.010
Drift at 14 psi and 25°C (% FS)	Negligible	Negligible	Negligible	Negligible	Negligible
Maximum Drift at Maximum Pressure and Temperature (% FS/Year) (psi)	0.02 (2.0)	0.02 (3.2)	0.02 (4.0)	0.02 (5.0)	0.025 (7.5)

Opsis™ Gauge Variants

Configurations	150°C Gauge		175°C Gauge		200°C Gauge	
	10k	16k	20k	25k	30k	
Single Sensor						
Single Sensor + Feedthrough						
Dual Sensor						
Dual Sensor + Feedthrough						

Special calibration available upon request
 Single sensor non feedthrough variants for 150°C and 175°C have 0.75-in. OD
 All feedthrough and dual sensor variants have 1.125-in. OD

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com

Sales of Halliburton products and services will be in accord solely with the terms and conditions contained in the contract between Halliburton and the customer that is applicable to the sale.

H013065 05/19 © 2019 Halliburton. All Rights Reserved.