



RESERVOIR GROUP

Well Monitoring





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MEMORY GAUGES





Quartz Memory Gauge Elite

WELL MONITORING Product Overview



Reservoir Group’s Elite Quartz memory gauge delivers high performance data acquisition. A real-time clock for up to the second data accuracy and metal to metal seals for ultimate leak protection.

The Elite is a compact pressure and temperature memory gauge featuring large memory, multi-sample rate capability, automatic Start/Stop functionality, and proven quartz pressure transducer technology. It includes a replaceable silver-coated metal C-Ring, a primary metal-to-metal seal, double O-Ring seals, and a torque set metal-to-metal seal for leak protection. The electronics are sealed inside an evacuated and Argon-filled internal housing.

Automatic pressure and temperature thresholds allow the gauge to start and stop recording without operator input. It monitors sensor readings every two minutes and starts recording if thresholds are exceeded, stopping automatically when readings fall below programmed thresholds.

Features	Benefits
Large non-volatile memory	Real-time values for easy analysis
Automatic start/stop functionality	No operator input required
Metal-to-metal seals	Eliminates leaks in hostile wells

Elite for Demanding Applications

- Gradient surveys
- Pressure build-ups or draw-down tests
- Slickline operations
- Static, flowing and buildup surveys
- Production surveys
- Reservoir evaluation, well testing and DST
- Production optimisation



Quartz Memory Gauge Elite

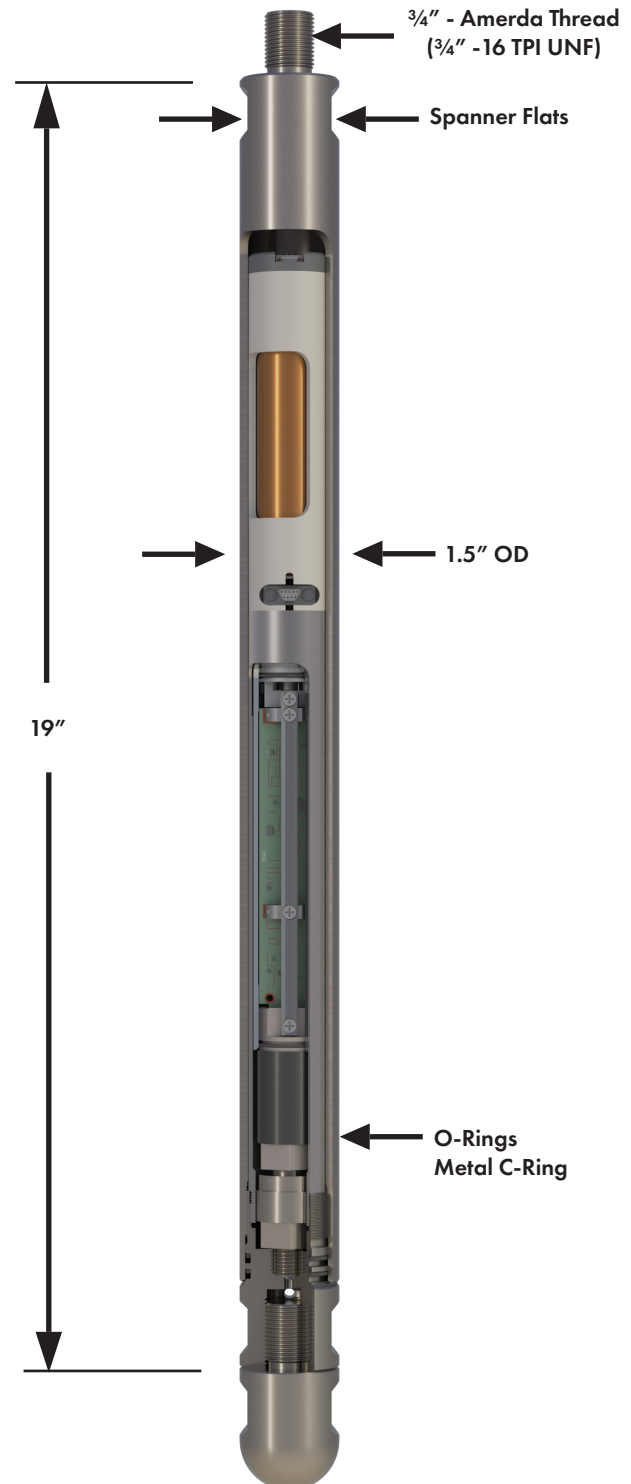
WELL MONITORING Technical Specifications

Pressure	
Maximum external pressure	Must not exceed sensor range or 15 ksi max.
Sensor Range	10 ksi and 15 ksi
Sensor type	Quartz Resonator
Accuracy	< ± 0.02% FSO
Accuracy typical	±0.01% FSO
Resolution (*0.1 second sampling interval only)	10 ksi, <0.0025psi (*<0.025 psi) 15 ksi, <0.0033psi (*<0.033 psi)
Temperature	
Maximum temperature	Must not exceed range 150°C Max
Range	0°C to 150°C
Accuracy	±1.0°C
Accuracy Typical	±0.5°C
Resolution	0.01°C
Power	
Battery Power	CC Lithium (hardwired), AA, C or CC Lithium
Operating Voltage	3.2 to 3.9 V
Battery Life*	Up to 2 years
Memory	
Sampling interval	0.1 seconds, 1 to 600 seconds
Memory Type	Non-volatile
Capacity**	6 million data sets (60 million data sets)
Record contents	Time, pressure, temperature
Other	
Materials	SS 17-4 PH, Sub K500 Monel
Service	Standard and H ₂ S

*Battery life varies with temperature, sample rate, and battery type.

** 6 million data sets are achievable based on a 1 second sampling interval but may be limited by battery capacity available and temperature of operation (60 million data sets are achievable based on a 0.1 second sampling interval but may be limited by battery capacity available and temperature of operation).

1.5" O.D.





Quartz Memory Gauge QM200L-EM

WELL MONITORING Product Overview



Reservoir Group’s flagship quartz memory gauge QM200L-EM delivers extreme accuracy in high pressure and temperature (HPHT) environments.

The QM200L-EM gauge offers exceptional data quality using Quartzdyne’s advanced digital hybrid technology. Its field-replaceable 200°C memory module allows quick electronics change-out, ensuring virtually uninterrupted use. The gauge comes with a standard 4 million dataset memory module, with an optional 8 million dataset module (max 185°C rated).

Constructed with materials like Hastelloy and Inconel to combat corrosion in HPHT hostile wells, the QM200L-EM has a 1.25” OD and a lockable battery pack, making it rugged enough to withstand high levels of shock and vibration. Its slim design also allows for deployment in a spring-mounted Shock Housing if necessary.

Features	Benefits
Rated up to 25 ksi and 200°C	Superior performance in HPHT environments
Field replacement memory modules	Provides the best reliability in any environment
Sequential or duplicated memory options	Fully flexible set-up to suite the well or test conditions
Fits into standard downhole gauge carriers and housings	Suitable for wireline and tubing conveyed applications
Can be converted to SRO (surface read-out) modes	Additional flexibility at a modest additional cost

QM200L-EM for Demanding Applications

- Gradient surveys
- Pressure build-ups or draw-down tests
- Slickline operations
- Static, flowing and buildup surveys
- Interface test
- Hostile conditions and corrosive environments
- Reservoir evaluation, well testing and DST
- Production optimisation



Quartz Memory Gauge

QM200L-EM

WELL MONITORING

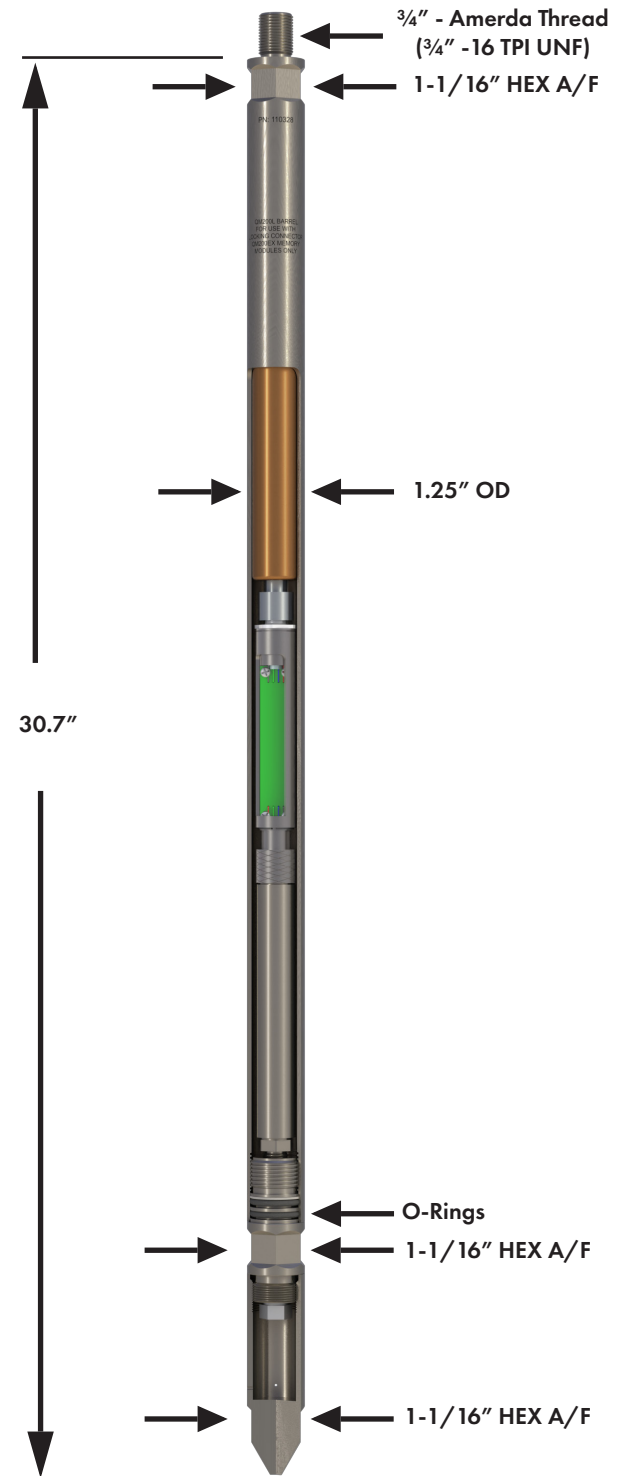
Technical Specifications

Pressure	
Maximum external pressure	Must not exceed sensor range or 23 ksi max.
Sensor Range	5 options from 5 ksi to 25 ksi
Sensor type	Quartz Resonator
Accuracy	< ± 0.015% FSO
Drift	±0.02% FSO per year
Resolution (*0.1 second sampling interval only)	5 ksi, <0.006psi (*<0.06 psi) 10 ksi, <0.006psi (*<0.06 psi) 16 ksi, <0.008psi (*<0.08 psi) 20 ksi, <0.008psi (*<0.08 psi) 25 ksi, <0.010psi (*<0.10 psi)
Temperature	
Maximum temperature	Must not exceed range 200°C Max
Range	0 to 150°C, 177°C, and 200°C
Accuracy	±0.15°C
Repeatability	<0.01°C
Resolution	<0.05°C (scales directly with sample rate)
Power	
Battery Power	2CC Lithium
Operating Voltage	3.2 to 3.9 V
Battery Life*	Up to 1 year
Memory	
Sampling interval**	0.1 seconds, 1 second to 1 hour
Memory Type	Non-volatile
Capacity	8 million data sets (sequential) 4 millions data sets (redundant)
Record contents	Time, pressure, temperature
Other	
Materials	Inconel 718 and Hastelloy C-276
Service	Standard and H ₂ S

*Battery life varies with temperature, sample rate.

**Specified at 125°C and 5 second sampling interval

1.25" O.D.





Quartz Memory Gauge QM200S

WELL MONITORING Product Overview



Reservoir Group’s QM200 slim quartz memory gauge is one of the most rugged and compact gauges available on the market, designed for high pressure and temperature monitoring.

The QM200 Slim is a compact 0.75” OD quartz memory gauge designed for deployment in wireline shock housings/carriers and tubing conveyed carriers. It can monitor high pressure and temperature up to 200°C and 25 ksi using Quartzdyne’s digital hybrid technology.

The small diameter allows for faster response times. A field-replaceable 200°C memory module ensures continuous use during multiple runs. It comes standard with a 1 million dataset memory module, with an optional 2 million dataset module (max 185°C rated).

Made with Hastelloy and Inconel, it resists corrosion in HPHT hostile wells. Reservoir Group offers various carriers for the QM200 Slim and can design custom carriers for specific applications.

Features	Benefits
Rated up to 25 ksi and 200°C	Superior performance in HPHT environments
Field replacement memory modules	Provides the best reliability in any environment
Sequential or duplicated memory options	Fully flexible set-up to suite the well or test conditions
Fits into standard downhole gauge carriers and housings	Suitable for wireline and tubing conveyed applications

QM200S for Demanding Applications

- Gradient surveys
- Pressure build-ups or draw-down tests
- Slickline operations
- Static, flowing and buildup surveys
- Interface test
- Hostile conditions and corrosive environments
- Reservoir evaluation, well testing and DST
- Production optimisation

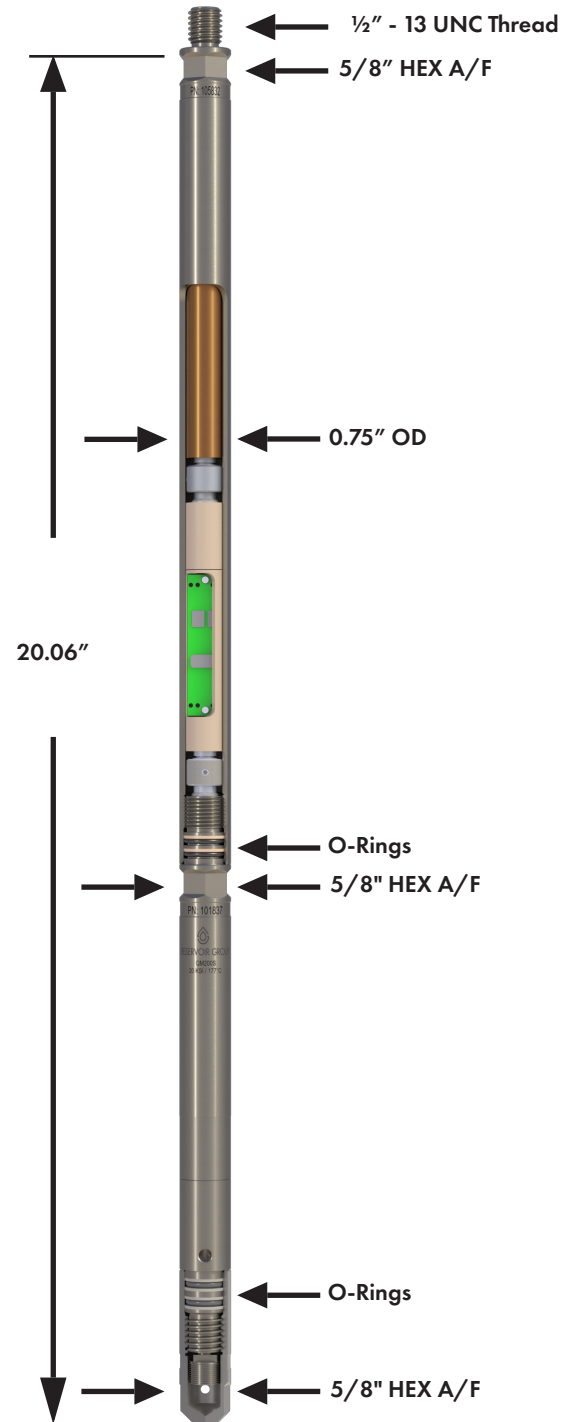


Quartz Memory Gauge QM200S

WELL MONITORING Technical Specifications

0.75" O.D.

Pressure	
Maximum external pressure	Must not exceed sensor range or 25 ksi max.
Sensor Range	4 options from 10 ksi to 25 ksi
Sensor type	Quartz Resonator
Accuracy	< ± 0.015% FSO
Drift	± 0.02% FSO per year
Resolution (*0.1 second sampling interval only)	10 ksi, <0.006psi (*<0.06 psi) 16 ksi, <0.008psi (*<0.08 psi) 20 ksi, <0.008psi (*<0.08 psi) 25 ksi, <0.010psi (*<0.10 psi)
Temperature	
Maximum temperature*	Must not exceed range 200°C Max
Range	0 to 150°C, 177°C, and 200°C
Accuracy	± 0.15°C
Repeatability	< 0.01°C
Resolution	< 0.05°C (scales directly with sample rate)
Power	
Battery Power	2AA or 4AA Lithium
Operating Voltage	3.2 to 3.9 V
Battery Life**	9.9 or 19 days***
Memory	
Sampling interval	0.1 seconds, 1 second to 1 hour
Capacity****	1 million data sets (sequential) 500,000 data sets (redundant)
Record contents	Time, pressure, temperature
Other	
Materials	Inconel 718 and Hastelloy C-276
Service	Standard and H ₂ S



*Optional QM200EX-2M memory module rated up to 185°C

**Battery life varies with temperature, sample rate.

***Specified at 125°C and 5 second sampling interval

****Double this capacity for optional QM200EX-2M memory module



Reservoir Group’s Apex gauge excels in remote operations - fully automated, Apex requires no operator input to accurately record data.

This gauge operates in monitor mode, checking sensor readings every two minutes. It starts recording to memory when user-programmed thresholds are exceeded, time-stamping the data at a set sample rate. It stops automatically when readings fall below the thresholds.

The Battery Pack is classified as non-dangerous for shipping and is detachable, allowing easy replacement without special tools, making it suitable for remote locations. A removable switch prevents accidental recording during storage in warmer conditions where thresholds might be exceeded.

Features	Benefits
Fully automatic	Ideal for remote operations, no operator input is needed
All data is stored with real-time values	Enables quick and easy analysis
Large data set memory	Provides long duration recording at fast sampling rates
Innovative electronics	Dramatically reduces power consumption
Simple battery pack change	Great for remote locations

Apex for Demanding Applications

- Gradient surveys
- Pressure build-ups or draw-down tests
- Slickline operations
- Stimulation monitoring
- Frac monitoring
- Temperature logging
- Reservoir evaluation, well testing
- Production optimisation
- Gauge carrier operations



Piezo Memory Gauge

Apex

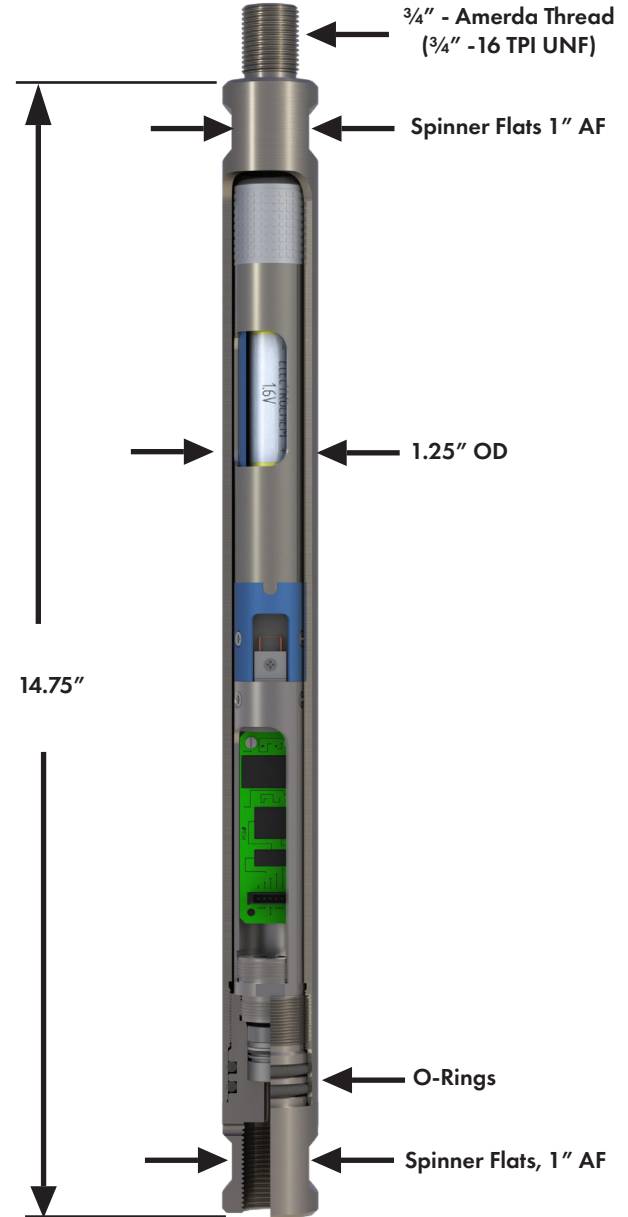
WELL MONITORING

Technical Specifications

1.25" O.D.

Pressure	
Maximum external pressure	Must not exceed sensor range or 15 ksi max.
Sensor Range	2 options from 8.6 ksi ans 15 ksi
Sensor type	Piezo-resistive
Accuracy	± 0.06% FSO
Drift	± 0.04% FSO
Resolution	0.1 psi
Temperature	
Maximum temperature	Must not exceed range 150°C Max
Range	0 to 150°C
Accuracy	±1.0°C
Accuracy typical	±0.5°C
Resolution	0.05°C
Power	
Battery Power	AA Lithium
Operating Voltage	3.6 to 3.9 V
Battery Life*	Better than 1 year
Memory	
Sampling interval	1 to 600 seconds
Capacity	4 millions data sets
Record contents	Time, pressure, temperature
Other	
Materials	SS 17-4 PH, Sub K500 Monel
Service	Standard and H ₂ S

*Battery life varies with temperature, sample rate.





Reservoir Group’s Sentinel gauge is an extremely rugged downhole pressure and temperature gauge designed to be run in wireline operations

The Sentinel is a user-friendly ‘Run-it-yourself’ gauge in a bespoke spring-mounted shock-absorbing assembly. It operates fully automatically, requiring no operator input to acquire data.

In monitor mode, it checks pressure and temperature every two minutes. When user-programmed thresholds are exceeded, it switches to record mode and stores data at a pre-set sample rate. It stops recording automatically when readings fall below the thresholds and reverts to monitor mode.

The Sentinel has a 1,000,000 data set memory and a real-time clock for storing data in individual survey files. It can perform multiple wireline surveys/drift runs on a single AA battery and conduct gradient/BHP surveys during any drift run without extra rig time or wireline operations.

Features	Benefits
Fully automatic	Ideal for remote operations, no operator input is needed
All data is stored with real-time values	Enables quick and easy analysis
Large data set memory	Provides long duration recording at fast sampling rates
Innovative electronics	Dramatically reduces power consumption
No dangerous goods paperwork required	Easy shipping

Sentinel for Demanding Applications

- Gradient surveys
- Wireline operations
- Production surveys
- Perforation monitoring
- Reservoir evaluation, well testing, and DST
- Stimulation monitoring
- Pressure build-ups or draw-down tests



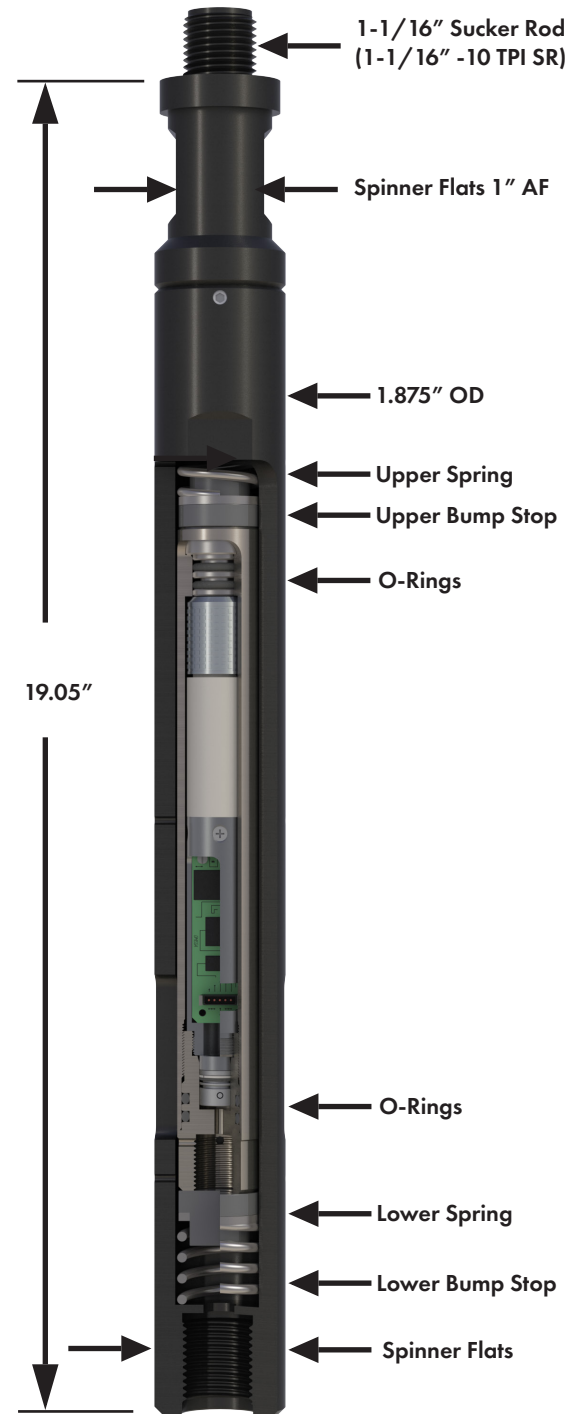
Piezo Memory Gauge Sentinel

WELL MONITORING Technical Specifications

Pressure	
Maximum external pressure	Must not exceed sensor range or 15 ksi max.
Sensor Range	2 options from 8.6 ksi ans 15 ksi
Sensor type	Piezo-resistive
Accuracy	$\pm 0.06\%$ FSO
Drift	$\pm 0.04\%$ FSO
Resolution	0.2 psi
Temperature	
Maximum temperature	Must not exceed range 150°C
Range	0 to 150°C
Accuracy	$\pm 1.0\text{°C}$
Accuracy typical	$\pm 0.5\text{°C}$
Resolution	0.05°C
Power	
Battery Power	AA Lithium - hardwired
Operating Voltage	3.6 to 3.9 V
Battery Life*	Up to a 1 year
Memory	
Sampling interval	1 to 600 seconds
Memory Type	Non-volatile
Capacity	1 million data sets
Record contents	Time, pressure, temperature
Other	
Connections	1-1/16" sucker rod
Materials	SS 17-4 PH, Sub K500 Monel
Service	Standard and H ₂ S

*Battery life varies with temperature, sample rate.

1.875" O.D. (Shock Housing & Gauge Assembly)





Piezo Memory Gauge Micro Automatic

WELL MONITORING Product Overview



Reservoir Group’s Micro Automatic gauge is fully automated and requires no operator input to acquire data.

The gauge operates in monitor mode, checking pressure and temperature every two minutes. When user-programmed thresholds are exceeded, it switches to record mode, storing data at a pre-set sample rate. At the end of a survey, it stops recording when readings fall below the thresholds and returns to monitor mode.

This low-power gauge uses a single AA battery for multiple runs. It features a real-time clock for accurate data storage and a large memory for easy data download and analysis. The compact gauge measures 10.5” long and is available in 1.25” OD or 1” OD for slim-hole applications.

Features	Benefits
Fully automatic	Ideal for remote operations, no operator input is needed
All data is stored with real-time values	Enables quick and easy analysis
Large data set memory	Provides long duration recording at fast sampling rates
Innovative electronics	Dramatically reduces power consumption

Micro Automatic for Demanding Applications

- Gradient surveys
- Pressure build-ups or draw-down tests
- Casing leak detection
- Stimulation monitoring
- Frac monitoring
- Temperature logging
- Gas Lift mandrel
- Reservoir evaluation, well testing
- Static, flowing, and build-up surveys



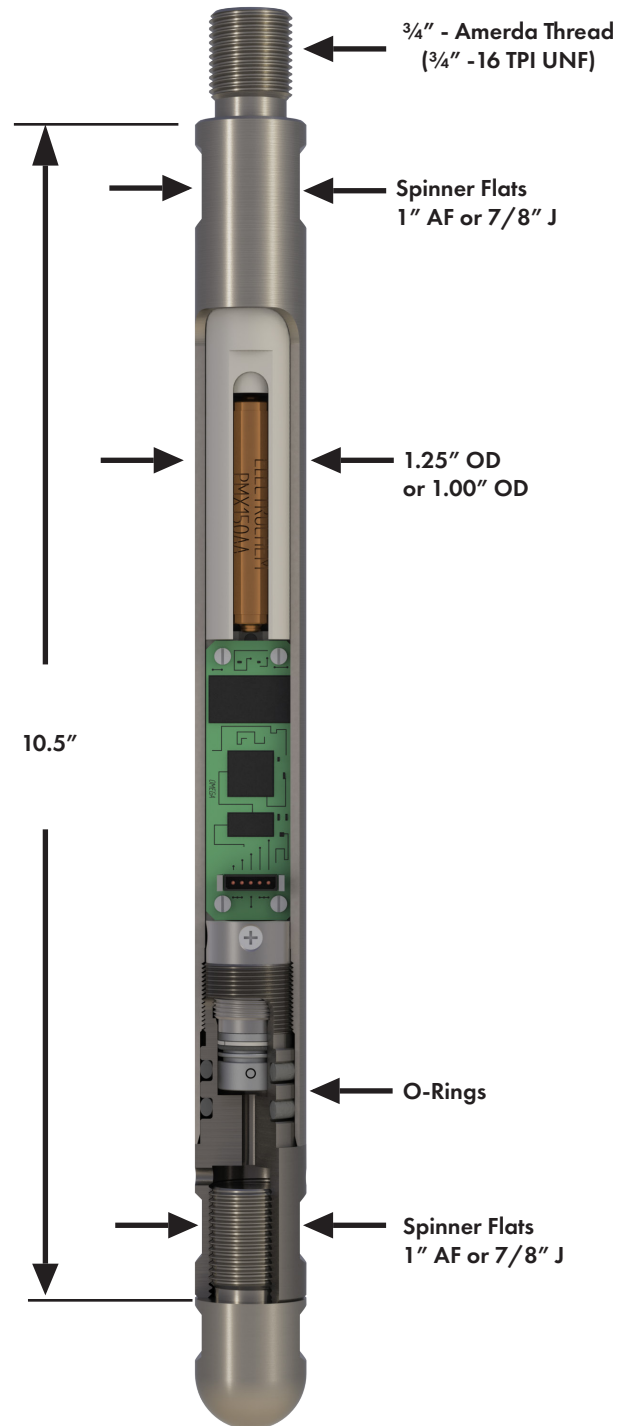
Piezo Memory Gauge Micro Automatic

WELL MONITORING Technical Specifications

**1.25" O.D.
and 1.00" O.D.**

Pressure	
Maximum external pressure	Must not exceed sensor range or 15 ksi max.
Sensor Range	2 options from 8.6 ksi ans 15 ksi
Sensor type	Piezo-resistive
Accuracy	± 0.06% FSO
Drift	± 0.04% FSO
Resolution	0.2 psi
Temperature	
Maximum temperature	Must not exceed range 150°C Max
Range	0 to 150°C
Accuracy	± 1.0°C
Accuracy typical	± 0.5°C
Resolution	0.05°C
Power	
Battery Power	AA Lithium - hardwired
Operating Voltage	3.6 to 3.9 V
Battery Life*	Up to 1 year
Memory	
Sampling interval	1 to 600 seconds
Memory type	Non-volatile
Capacity	1 millions data sets
Record contents	Time, pressure, temperature
Other	
Diameter options	1.25" or 1.00" OD
Materials	SS 17-4 PH, Sub K500 Monel
Service	Standard and H ₂ S

*Battery life varies with temperature, sample rate.





Piezo Memory Gauge Shortline

WELL MONITORING Product Overview



Reservoir Group’s Shortline-EM Piezo Memory Gauge is the shortest available in its class and is ideal for applications where longer gauges are difficult to use.

At only 8.23” long and with a 1.25” diameter, the Shortline is compact, robust and ideal for short rig-up wireline and gauge carrier applications. Using a single detachable ‘C’ size Battery Pack, it is capable of recording data for up to a year, helping our clients perform longer downhole surveys.

Features	Benefits
8.23” Long	Shortest gauge available to fit standard downhole carriers
Unique Electronics	Assembly is less susceptible to vibrations
Large data set memory (8,000,000)	Provides long duration recording at fast sample rates
Long lasting C and CC size battery packs	Uninterrupted data for up to a year or more

Shortline-EM for Demanding Applications

- Gradient surveys
- Pressure build-ups or draw-down tests
- Production monitoring and artificial lift control
- Static, flowing and buildup surveys
- Multiple well surveys without reprogramming
- Slickline operations
- Reservoir evaluation, well testing and DST
- Temperature logging
- Production optimisation



Piezo Memory Gauge

Shortline

WELL MONITORING

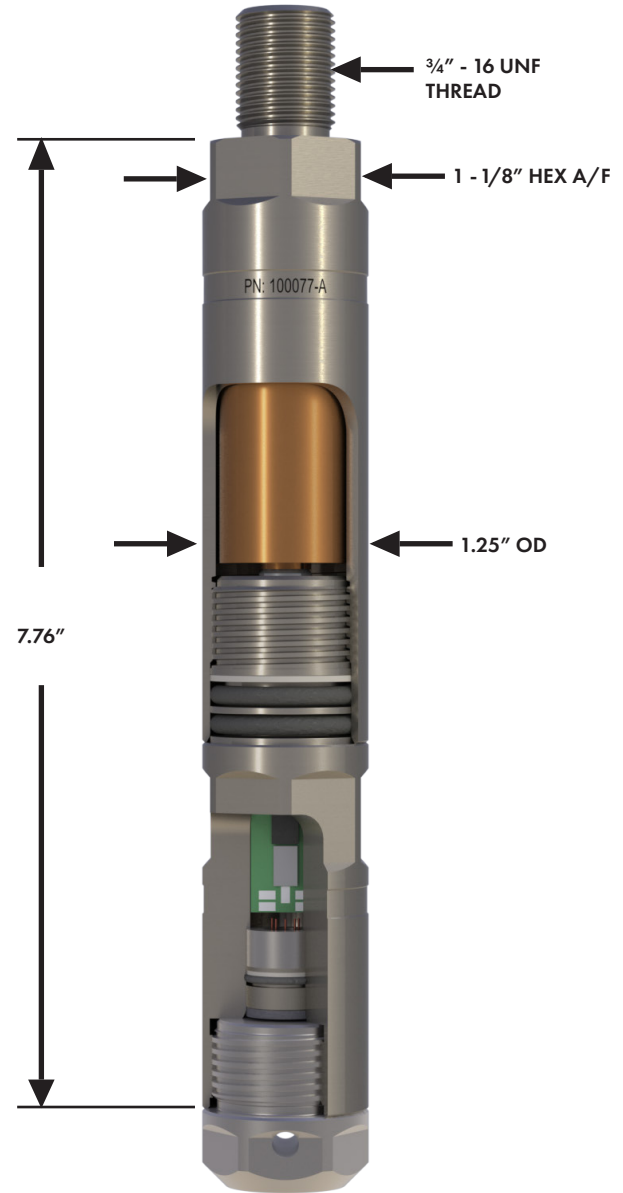
Technical Specifications

Pressure	
Maximum external pressure	Must not exceed sensor range or 25 ksi max.
Sensor range	8 options from 0.75 ksi to 25 ksi*
Sensor type	Piezo-resistive
Accuracy	< ± 0.050% FSO or better
Accuracy typical	± 0.030% FSO
Long-term stability	± 0.1% FSO
Drift	< 3 psi per year
Resolution	± 0.0003% FSO
Temperature	
Maximum temperature	Must not exceed range 177°C Max
Range	4 options from 100°C to 177°C
Accuracy	± 0.6°C
Repeatability	± 0.2°C
Resolution	± 0.0003% FSO
Power	
Battery Power	C or CC Lithium
Operating Voltage	3.6 to 3.9 V
Battery Life	193 days or more than 1 year**
Memory	
Sampling interval	1/10s, ≥1s
Capacity	8,000,000 Data sets
Record contents	Time, pressure, temperature, battery voltage
Other	
Materials	Inconel 718
Service	Standard and H ₂ S

**Battery life varies with temperature and sampling interval. Specified at 125°C & 5 second sampling interval

Note: The 25ksi version of the Shortline-EM gauge uses a high pressure battery barrel to achieve its maximum external pressure rating. A 'Sub CC' type battery pack is used on this gauge version.

1.25" O.D.
(Standard Battery Barrel and "C" Battery Pack)





Piezo Memory Gauge Slimline

WELL MONITORING Product Overview



Reservoir Group’s Slimline Piezo Memory Gauge delivers reliable data in tight diameters and where flow is critical.

The Slimline gauge, measuring just ¾" in diameter and 7.95" in length, is ideal for small bore applications. Its low power consumption allows it to run for extended periods on a single AA battery. The detachable AA Battery Pack facilitates quick battery changes and gauge turnaround and is classified as non-dangerous goods for easy shipping.

The Slimline can be configured to port external pressure directly to the transducer, with a maximum differential pressure rating of 15 ksi, using a seal arrangement on the transducer housing and seal nose, or a seal tandem adapter.

Features	Benefits
Reduced mass and dimensions	Quick temperature response
Long lasting AA size battery pack	Provides uninterrupted data
Large data set memory (1,000,000)	Provides long duration recording at fast sample rates
Can be run inside shock housing on spring mounts	Added shock and vibration protection
Small diameter is suitable for stimulation work	Helps minimize the restriction to flow of the well

Slimline for Demanding Applications

- Gradient surveys
- Pressure build-ups or draw-down tests
- Production monitoring and artificial lift control
- Static, flowing and buildup surveys
- Multiple well surveys without reprogramming
- Slickline operations
- Reservoir evaluation, well testing and DST
- Temperature logging
- Production optimisation



Piezo Memory Gauge Slimline

WELL MONITORING Technical Specifications

Pressure

Maximum external pressure	Must not exceed sensor range or 25 ksi max.
Sensor range	8 options from 0.75 ksi to 25 ksi
Sensor type	Piezo-resistive
Accuracy	< ± 0.050% FSO
Accuracy typical	± 0.030% FSO
Long-term stability	± 0.1% FSO
Drift	< 3 psi per year
Resolution	± 0.0003% FSO

Temperature

Maximum temperature	Must not exceed range 177°C Max
Range	4 options from 100°C to 177°C
Accuracy	± 0.6°C
Repeatability	± 2°C
Resolution	± 0.0001% FSO

Power

Battery Power	AA Lithium
Operating Voltage	3.6 to 3.9 V
Battery Life**	56 or 85 days***

Memory

Sampling interval	1/100s, 1/10s, ≥1s
Capacity	1,000,000 Data sets
Record contents	Time, pressure, temperature, battery voltage

Other

Materials	Inconel 718
Service	Standard and H ₂ S

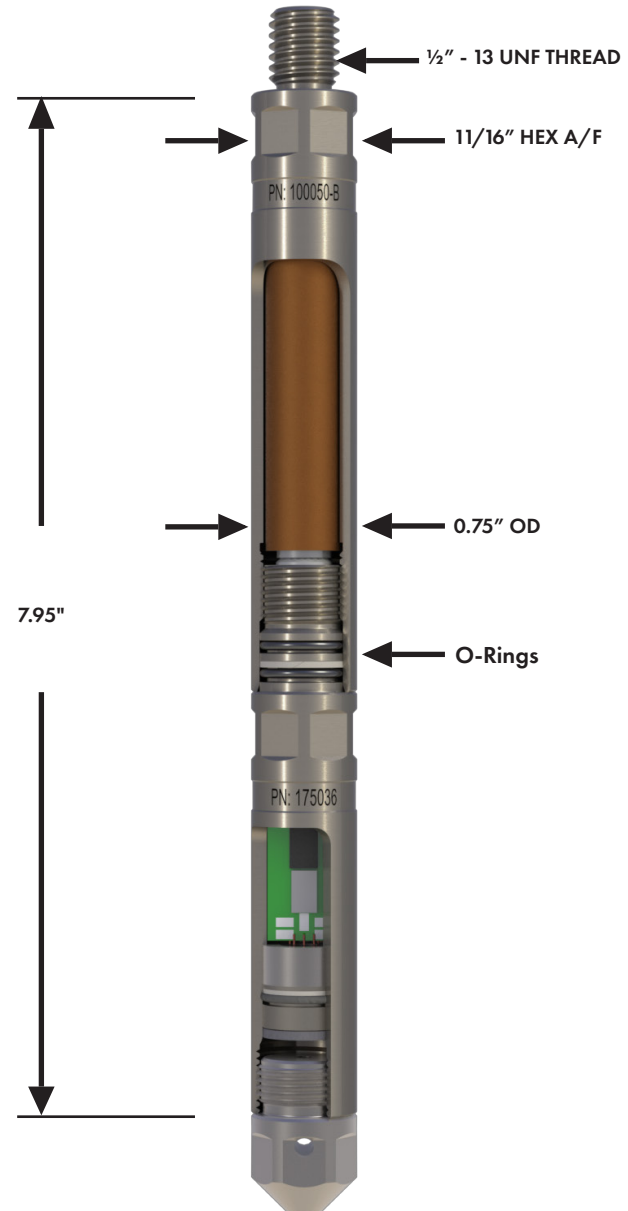
**Battery life varies with temperature and

***Sampling interval. Specified at 125°C & 5 second sampling interval

Note: The Slimline gauge can be ported for external pressure directly to the Transducer. This is referred to as 'Slimline 0.75"OD, 15ksi MAX DIFF'. It is configured with a seal on the trasducer housing and seal nose or tandem adapter connection to allow isolation from internal pressure.

0.75" O.D.

(Standard Battery Barrel and
"AA" Battery Pack)





Reservoir Group’s Pulse Piezo Memory Gauge is ideal for perforating jobs where a fast response is required to capture critical pressure data. The Pulse too is capable of fast sampling at selected ‘burst’ rates up to 115,200 samples per second.

Fast sampling in the Pulse gauge can be triggered in two ways: by pressure ‘Level’ or pressure ‘Window’. Using pressure ‘Level’, fast sampling starts when a specific pressure set point is reached. Using pressure ‘Window’, fast sampling begins when pressure increases by a set amount within a set time period, indicating a rapid pressure change.

Features	Benefits
Programmable ‘burst’ sampling intervals up to 115,200 samples	Performs in perforating jobs where a fast response is required
Replaceable AA lithium battery pack	Ease of use
No dangerous goods paperwork required	Easy shipping
Pressure rating up to 30 ksi operation	Enables fast sampling

Pulse for Demanding Applications

- High pressure monitoring
- Pressure build-ups or draw-down tests
- Perforating monitoring
- Production optimisation



Piezo Memory Gauge Pulse

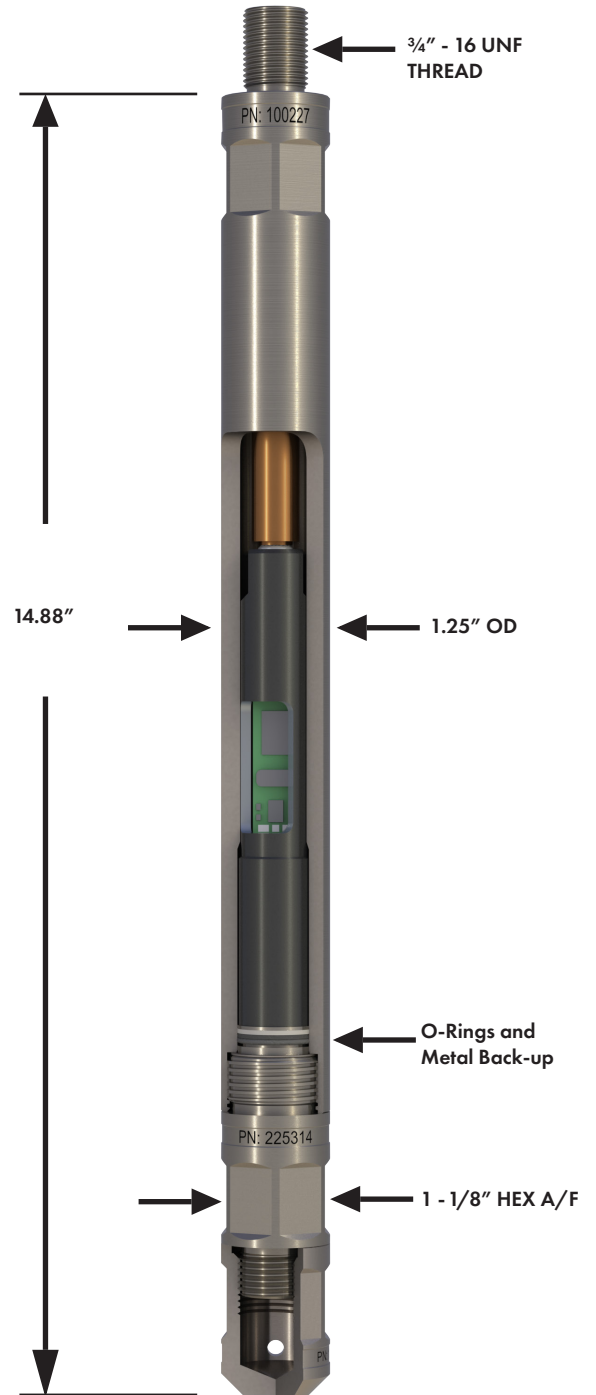
WELL MONITORING Technical Specifications

Pressure	
Maximum external pressure	Must not exceed sensor range or 30 ksi max.
Sensor range	100 psi to 30 ksi
Sensor type	Piezo-resistive
Accuracy (>100psi)	± 0.10% FSO
Resolution	0.0003% FSO
Temperature	
Maximum temperature	Must not exceed range 150°C Max
Range	4 options from 100°C to 177°C
Accuracy	± 1.0°C
Repeatability	± 1.0°C
Resolution	0.001% FSO
Power	
Battery Power	AA Lithium
Operating Voltage	3.2 to 3.9 V
Battery Life*	Up to 42 days**
Memory	
Sampling interval	1 to 600 seconds
Standard Capacity	500,000 Data sets
Burst Capacity	2,000,000 Data sets
Record contents	Time, pressure, temperature, battery voltage
Other	
Materials	Inconel 718
Service	Standard and H ₂ S

*Battery life varies with temperature and sampling interval.

** Life expected using standard sampling only, on 5 second sampling interval at 125°C. Additional 'Burst' sampling will reduce this marginally.

1.25" O.D.





Pressure Gauge Well Head Recorder

WELL MONITORING Product Overview

Reservoir Group’s Well Head Recorder (WHR) pressure gauge’s accuracy and resolution is far superior to analogue dial-gauges and facilitates gathering of a large amount of data, resulting in fewer trips to the well site.

The WHR is a battery-powered electronic pressure gauge that records surface pressure and temperature at a programmable interval.



Features	Benefits
ATEX approved: ^{EX} II 2 G EX ia IIC T4	Can be used in zoned areas
Large non-volatile memory	Real-time values for easy analysis
Rotatable face (350°)	Easy mounting and viewing
Long lasting battery life up to 2 years	Provides long duration of recording
Programmable sampling interval from 1 sec to 1 day	Performs in jobs where fast response is required
IP65 protection	Enhanced protection from non-corrosive materials

Well Head Recorder for Demanding Applications

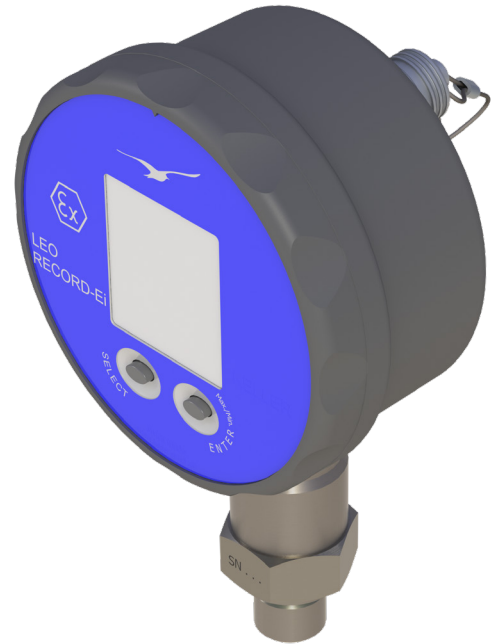
- Well head, separator, manifold & flow line pressure monitoring
- Test/short-term monitoring
- Replacement for analogue dial gauges
- Long-term monitoring



Pressure Gauge Well Head Recorder

WELL MONITORING Technical Specifications

Pressure	
Sensor range	0 - 300 bar 0 - 700 bar 0 - 1000 bar
Sensor type	Piezo-resistive
Accuracy	± 0.10% FSO (-50°C)
Resolution	100mbar (1.5 psi)
Temperature	
Range	Calibrating 0°C to 50°C (Operational -10°C to 60°C)
Accuracy	± 0.5°C
Resolution	± 1.0°C
Power	
Battery Power	AA Lithium, Tadiran type SL-760 (connectorized)
Operating Voltage	3.6 V
Battery Life**	Up to 2 years**
Memory	
Sampling interval	1 second to 1 day
Memory Type	**Non-volatile
Standard Capacity	28,500 Data sets for sample rates 1 - 15 secs 14,500 Data sets for sample rates > 15 secs
Record contents	Time, pressure, temperature, battery voltage
Other	
Connection	1/4" NPT thread (others available upon request)
Calibration	2 year interval price



Supplied Items: WHR with selected pressure range, USB interface, Software and Runsheet instructions, all contained in a compact plastic case.

*Battery life varies with temperature and sampling interval.

** Life expected using standard sampling only, on 5 second sampling interval at 125°C. Additional 'Burst' sampling will reduce this marginally.



Quartz Memory Gauge MLT 300

WELL MONITORING Product Overview



Reservoir Group’s Mini Logging Tool (MLT 300) has all the benefits of a production logging tool in a compact modular designed package.

The MLT300 provides correlated data on depth, pressure, RTD temperature, CCL, and flow. It consists of three main modules: the platinum Resistance Temperature Detector (RTD) module, the Casing Collar Locator (CCL) module, and the Pressure/Flow module.

The MLT300 features a field-replaceable electronic Memory Module at the top of the string, controlling the system. Below the Memory Module, any combination of CCL and/or RTD modules can be used, with a single Pressure/Flow module always at the bottom. Only one Pressure/Flow module is allowed per string. Memory modules can be swapped efficiently during field operations, enabling continuous service. While data is retrieved from one module, a new survey can begin immediately with a fresh memory module.

Features	Benefits
Compact 1.50" OD	Allows for data gathering where other logging tools can't fit
Modular design	Combinations of modules can be used simultaneously
Replaceable memory module	Allows for re-deployment while retrieving data
Dual RTD's increase tool sensitivity to temperature change	Provide a fast, high resolution temperature profile along the wellbore
Single external pressure/flow housing	Accurate and economical for unique applications

MLT 300 for Demanding Applications

- Pressure build-ups or draw-down tests
- Slickline operations
- Production optimization
- Static, flowing and buildup surveys
- Temperature logging
- Casing leak detection



Quartz Memory Gauge

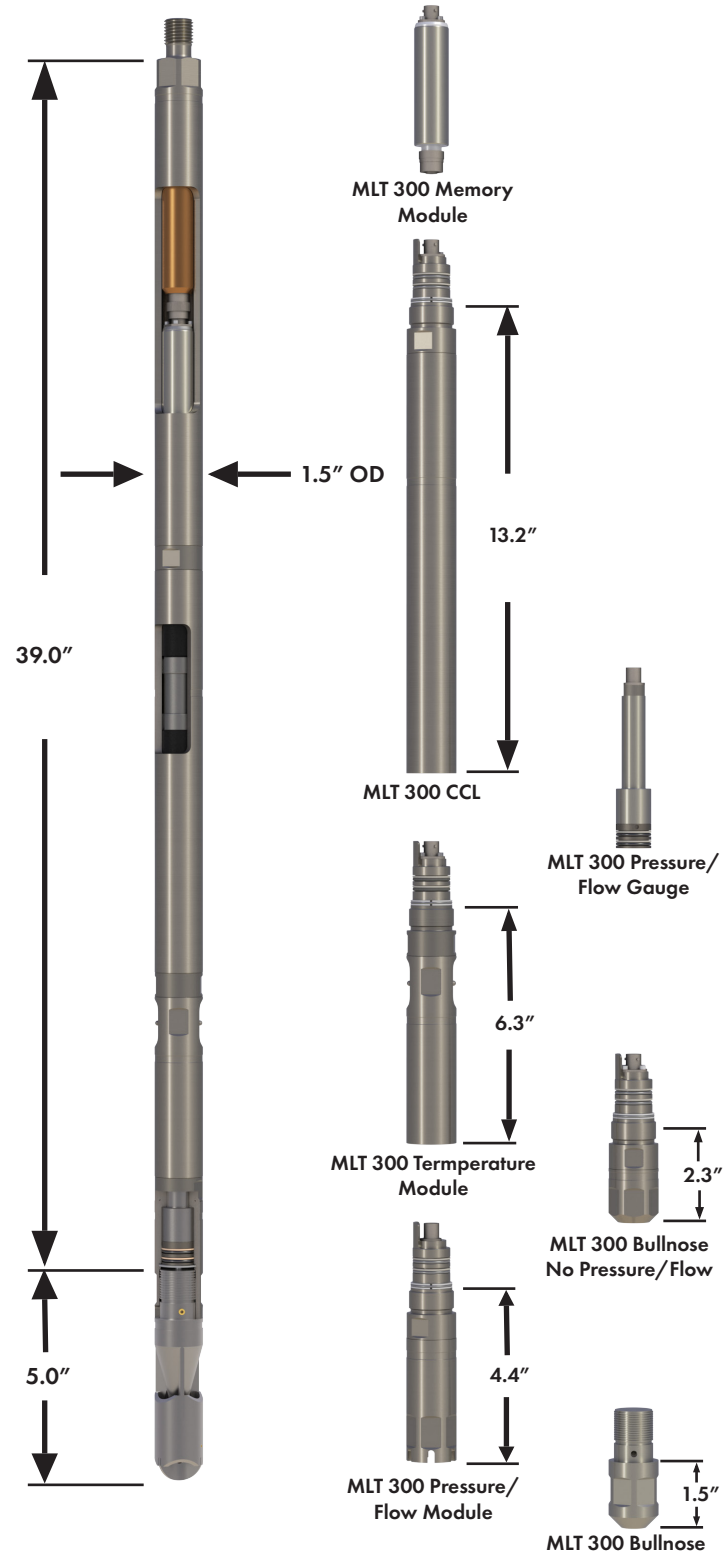
MLT 300

WELL MONITORING

Technical Specifications

1.25" O.D.

Pressure	
Maximum external pressure	Must not exceed sensor range or 25 ksi max.
Sensor Range	5 options from 6 ksi to 25 ksi
Sensor type	Piezo resistive
Accuracy	< ± 0.050% FSO
Drift	< 3 psi per year
Resolution	0.003% FSO
Temperature	
Sensor Type	Dual platinum resistance temperature detector
Maximum temperature	Must not exceed range 177°C Max
Range	0 to 150°C or 15 to 177°C
Accuracy	±0.1°C
Repeatability	±0.05°C
Resolution	0.001% FSO
CCL	
Sensor	Electromagnetic casing collar locator
Power	
Battery Power	CC type Lithium
Operating Voltage	3.2 to 3.6 V
Current	15-20 mA
Memory	
Sampling interval**	0.1 seconds to 1.82 hours
Program segments	31
Capacity	1,800,000 data sets
Record contents	Time, pressure, temperature, collars, spinner

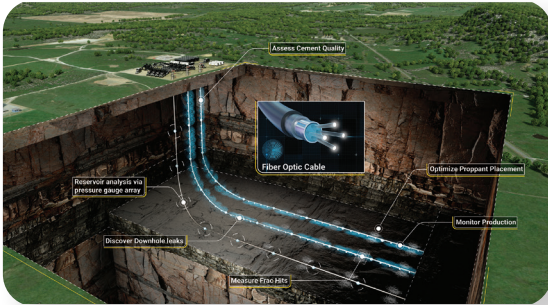


REAL-TIME MONITORING SOLUTIONS





REAL-TIME MONITORING SOLUTIONS

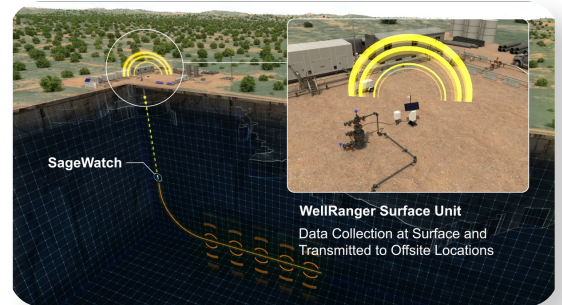


Casing Conveyed Systems:

- ✓ Installed outside the casing in both cemented and non-cemented applications.
- ✓ Utilizes real-time pressure and temperature gauges, and fiber optic technology.
- ✓ Simultaneous monitoring of unlimited points within a single wellbore.

Tubing Conveyed Systems:

- ✓ Installed below standard artificial lift completions.
- ✓ Utilizes real-time pressure and temperature gauges.
- ✓ Fully retrievable and reusable.



Thru-Tubing Systems:

- ✓ Install real-time bottom hole pressure and temperature gauges and fiber optic technology under pressure.
- ✓ Fully retrievable and reusable.
- ✓ Used in conjunction with standard completion methods.

SageLift Electric Gas Lift Systems:

- ✓ Pairs custom bi-directional gas lift valves with real-time bottom hole pressure and temperature gauges.
- ✓ Manual or automated operation.
- ✓ Ability to switch between annular and tubular flow without intervention.

