

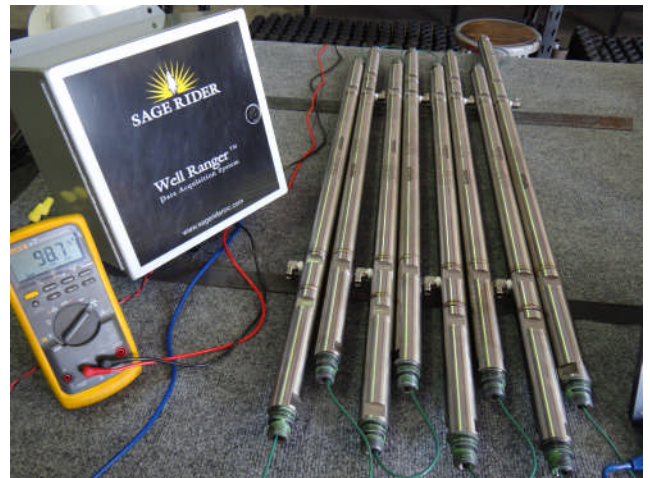
RANGER

GAUGE SYSTEMS

Downhole In-Line Digital Quartz Pressure/Temperature Probe

Ranger Permanent Hybrid Digital Addressable Surface Read Out (DASRO) Gauge

The Ranger® DASRO gauge is a Quartz Digital Addressable Surface Read Out Pressure/Temperature Probe based on a resonating quartz sensor with digital signal transmission and addressing ability for multiple gauge deployment on a single line. Additionally, the DASRO has a cablehead on each end to allow in-line installation without need for a “Y” block. The internal gauge electronics consists of two custom microelectronic circuits that are hermetically sealed. Each gauge has a pre-assigned digital address for multiple unit operation on the same signal conductor. Fault protection current limiting is included for both the gauge electronics and the primary line.



FEATURES

- Two leak-testable cable-heads for in-line operation
- Dual built in current limiting assures that no one gauge can draw excessive current and that upstream readings are still available with a downstream line fault.
- Complete double redundancy for all cable current limiting circuit components. This feature, together with a built in automatic reset on power-up, allows the cable current limit function to continue to operate if one limiting channel should fail open. This protects against loss of communication with downstream gauges, due to a current limit component failure.
- No CPU or memory for reliable, long term, high temperature operation. Configuration data and addresses are permanent
- High reliability and quality due to hermetically sealed custom hybrid circuits. This type of circuit construction is a MUST for sustained, high-temperature, operation
- Hybrid circuits are fully tested and qualified per MIL-883E, Method 1010.7 Test Condition B
- Includes level two reliability testing to yield long operating life required for permanent applications
- Metal to metal seals, Swagelok® pressure fittings and welded Nitronic 50HS® housing construction throughout results in no elastomers
- Optional Inconel 718 pressure housings are available for very aggressive well environments.
- Integral quartz temperature sensor
- Pre-assigned address for multiple unit operation on the same single conductor
- 1024 address capability assures that gauges will have unique addresses
- Low power consumption 250mW (typical)

Specifications

Ranger DASRO gauge specifications are determined in accordance with the ANSI/ISA-S51.1-1979, American National Standard, "Process Instrumentation Terminology".

Pressure Sensor

Thickness shear mode quartz resonator (with INCONEL[®] isolation bellows)

Total System Pressure Accuracy

±0.02% of full scale including linearity, hysteresis and repeatability over calibrated temperature range

Pressure Repeatability

≤0.01% of full scale

Pressure Resolution

0.01 psi or better

Temperature Sensor

Quartz resonator

Temperature Accuracy

±0.5°C (±0.9°F) within calibrated temperature range. Pressure accuracy is independent of indicated temperature accuracy.

Temperature Resolution

0.005°C (0.01°F)

Standard Calibrated Temperature Ranges

25°C to 125°C (77°F to 257°F)

25°C to 150°C (77°F to 302°F)

25°C to 175°C (77°F to 347°F)

25°C to 200°C (77°F to 392°F)

Reliability Testing Levels

- Level II (Basic for all units)
 - 40°C Test to confirm fully and correct operation
 - Calibration and testing to full temperature and pressure ratings
 - 15-day burn-in at full pressure and temperature calibrated ranges
 - Current protection testing at room and full temperature
 - Gauge shock and vibration testing
 - Final QC inspection
- Level III (OPTIONAL, Includes Level II)
 - Additional: 15-day burn-in at full pressure and temperature calibrated ranges

DASRO Configurations / Model Numbers

Dual Cable Head SIDE pressure inlet	(Model No: 68xxB DASRO) – Same length
Single Cable Head SIDE pressure inlet	(Model No: 68x1B DASRO) – Same length
Single Cable Head BOTTOM pressure inlet	(Model No: 62xxB DASRO) – Shorter

"x" or "xx" = Denotes calibrated temperature range. Example: A 175C calibrated gauge 68xxB = 6875B, 68x1B = 6871B or 62xxB = 6275B

Operating Temperature Range

-40°C to 200°C (-40°F to 392°F)

Sample Rate

Complete pressure and temperature transmission in approximately one-second intervals

Operating and Calibrated Pressure Ranges

0 - 344.75 Bars (0 - 5,000 psia)

0 - 689.50 Bars (0 - 10,000 psia)

0 - 1103.20 Bars (0 - 16,000 psia)

0 - 1378.95 Bars (0 - 20,000 psia) - Optional

Dimensions (OD x L)

32.5mm x 81.3cm (1.281" x 46.5")

Weight

4.76 kg (10.5 lbs.)

Pressure Housing Wetted Material

Nitronic 50HS[®]

Sensor Wetted Materials

INCONEL[®] 600/625/718

Requirements of Conductor Cable

Single conductor coaxial cable with low conductor resistance. The maximum DC loop resistance is determined by the number of gauges on one line and the surface power supply. Can be up to 500 ohms with a capacitance of up to 1 ufd for a single unit installation and using a 30 volt surface power supply.

