Thermo Scientific DensityPRO NAI Gauge

Non-contacting, density gauge with wide temperature stability for optimal process control

The Thermo Scientific™ DensityPRO NAI Gauge is a non-contacting nuclear density gauge offering high stability, precision, and an unrivaled ambient operating temperature range to ensure reliable operation in virtually any climate.

- Smaller source size for increased safety and lower capital costs
- Dynamic ambient temperature range
- Gauge stability enhances precision for improved process control
- Flexible configuration
- Design for rugged performance

DensityPRO NAI Gauge and Remote Transmitter

The Thermo Scientific DensityPRO NAI non-contacting gauge uses a smaller source that emits up to 50% less radiation depending on application. This reduction in energy emissions increases worker safety, reduces capital costs, and complies with global ECO requirements.

Contained in the source head is the nuclear source that emits gamma radiation. This emission of energy will pass through the pipe or vessel wall, process material, and to the efficient detector opposite the source head. As the process material changes in density, the amount of energy reaching the detector also changes. By converting this energy reading to a density measurement, the system achieves a highly precise reading, enabling rapid response to variations in density.

The DensityPRO NAI gauge features the widest and most stable operating temperature range available in the industry. The precision afforded by this level of stability improves the ability to monitor process control for better yield.

Basic density measurement can be converted into a variety of output values, such as bulk density or percent by weight solids. Available options range from temperature compensation for process control to a user-specified reference temperature. Also available is a flow input that can be entered to calculate material mass flow, net solids flow, and totalizing of bulk quantities.

The DensityPRO NAI gauge offers flexible configuration options. Choose from an integrated detector unit or a remote transmitter unit dependent on application. Designed for rugged performance in a variety of climates, the DensityPRO NAI gauge is tested to meet global requirements including IEEE 344 for earthquake standards and IEC for shock and vibration.

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System performance	± 0.0015 g/cc (99% confidence) typical conditions
Stability	Drift less than ± 0.05% or radiation change over six months
Ambient temperature (field)	± 0.009% of radiation change per degree °C
Response time	2 seconds to 65,535 seconds
Source type	Cs-137 or CO-60, both stainless steel double encapsulated
Size	1 to 10,000 mCi (37 MBq to 370 GBq) Cs-137 or 1,000 to 3,000 mCi (37 GBq to 111GBq) Co-60
Source housing	Carbon steel or stainless steel, lead filled, polyurethane painted. Two-position shutter, locks in OFF (closed) position
System architecture	- 32-bit, 60 MHz micro computer unit - Real-time clock (RTC) - Lithium backup battery; voltage monitor for the RTC and SRAM circuits allows for configuration retentions in the event of power failure - Local I/O consisting of: four analog inputs; one 100-ohm Pt RTD input; two digital outputs (DO); two digital inputs (DI); one local serial communication port connection; one RS232/RS485 host serial communication port; connection for optional Intrinsically safety Input/output boards (ISIO); one +15 V power supply output; one Isolated 24 V output; one 10/100 Ethernet communication port with ESD protection; and one USB port.
Detection type	Sodium Iodide (NAI) scintillator with wide dynamic range and resists shock and moisture damage
Detector stabilization	Electronic control without heater stabilization for optimum performance over operating temperature range
Integrated/Remote detector enclosure	316 stainless steel or carbon steel polyurethane painted; optional water-cooled detector for higher temperature applications
Transmitter	Stainless Steel; Nema 4X and IP65; 20 push button keypad; 8 line monochrome LCD Power
Power requirements	115/230 Vac, ± 10%, 50/60 Hz or 24 Vdc
Operating temperature	-40°C to +75°C (-40°F to +167°F) ambient
Inputs	Two 4 – 20 mA inputs, full scale ± 0.3% over operating temperature range; two 0 – 10 Vdc input, full scale ± 0.3% over operating temperature range; two Digital inputs (DI): provides contact input with internal +5 Vdc wetting voltage; temperature compensation circuitry with 100-ohm Platinum RTD, 3 or 4 wire; full scale ± 0.5°C over operating temperature range
Outputs	4 – 20 mA output; full scale ± 0.3% over operating temperature range; Optional Intrinsically Safe Input/Output 4 – 20 mA output; full scale ± 0.3% over operating temperature range Isolated, loop-powered (default); Isolated, self-powered output; compliance with NAMUR standard
Series ouputs	RS485 half duplex, RS232 full duplex, Profibus PA Protocol Pending, HART Protocol pending
Contact closure (relay) outputs	Two relays, SPST-NO + SPST-NC Fully sealed 8A @ 250 Vac
Ratings and approvals	Earthquake/Seismic: IEEE 344; Vibration (sinusoidal): IEC 60068-2-6; Vibration (random): IEC 60068-2-64; Shock Resistance: IEC 60068-2-27; Composite temperature / humidity cyclic: IEC 60068-2-38

To maintain optimal product performance, you need immediate access to experts worldwide, as well as priority status when your air quality equipment needs repair or replacement. We offer comprehensive, flexible support solutions for all phases of the product life cycle. Through predictable, fixed-cost pricing, our services help protect the return on investment and total cost of ownership of your Thermo Scientific products.

For more information, visit our website at thermoscientific.com

This product is manufactured in a plant whose quality management system is ISO 9001 certified.

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