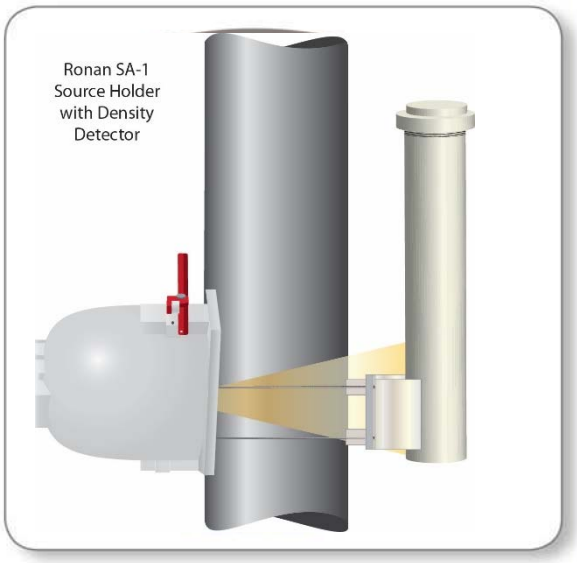
RONAN
ENGINEERING COMPANY
MEASUREMENTS DIVISION

Ronan Measurements Division supplies the process control industry with leading-edge Radiometric Measurement Systems that provide non-contact measurement solutions for the harshest environments.

DENSITY MEASUREMENT WITH X96S RADIOMETRIC TRANSMITTER

Ronan's Radiometric Density Measurement is designed to deliver outstanding performance in a wide range of difficult applications and process conditions. The system utilized a single computer compatible with all Ronan detectors.



Radiometric Measurement provides a safe and efficient, noncontact method to measure density or percent solids in liquids. Industries include Mining and Aggregates; Power; Refining, Oil and Gas; Chemical; Metals; Pulp and Paper; Dredging; and Cement. Ideal applications include liquids which are corrosive, abrasive or highly viscous, held at extreme temperatures or under high pressure, and for slurries. A Radiometric Measurement System consists of a gamma source and holder, a detector and a transmitter. The entire system mounts externally to the pipe and can be easily installed and maintained while the process is running without downtime, pipe modifications, or risk of accidental process release. The system can be installed on a variety of pipe materials: FRP, PVC, carbon steel, stainless Steel, glass-line pipe, rubber-lined pipe, and basalt-lined pipe. Z-Axial sections or spool pieces are available for small measurement ranges and small diameter pipes where increased accuracy and repeatability is desired.

X96S Radiometric Transmitter

The X96S remotely-mounted transmitter can be mounted in the field or control room. The system is backward-compatible to enable an easy upgrade of existing systems to newer transmitter technology. State-of-the-art transmitter-based electronics provide precision gauging. The system is menu-driven for simple programming via push buttons or Hart configurator. Built-in intelligence provides a range of features including:

- Empty Pipe Monitor
- Automatic source decay compensation
- State of the art dynamic tracking of process fluctuations
- Data logging and event recording
- Adjustable time constant

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X96S Density Specifications

Performance	
System Accuracy	+/- 1 % span
Outputs	HART® 4-20mA, Foundation Fieldbus 4 Form “C” Relay Outputs with 4 Isolated Open Collector Outputs Capable of Switching 4.5 to 30 volts
Pressure Input Temperature Input	Support for Process Pressure from 0-10 volts, or 4-20 mA Nickel or Platinum RTD Up to 8 Digital Inputs which can be individually configured as Dry or Live contacts, Quadrature, Encoders or Pulse Counters
Diagnostics	On-Board Modular Self-Test Watchdog Timer and Status LEDs
Calibration	Available Through Local Display, HART® Communicator/DCS
Environmental	
Operating Temperature	-10 to +60 C Heater Blankets Available for Low Temperatures and Small Measurement Ranges
Electrical	
Power Supply	90-240VAC, 24 VDC @ .035 A
Mechanical	
Construction Housing	Explosion Proof
Approvals	
Complies with:	ATEX CSA Class 1, Div 1 Groups A, B, C, D NEMA 4, NEMA 4X

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EXCELLENCE IN MONITORING AND MEASUREMENT

DENSITY RADIOMETRIC MEASUREMENT SYSTEM

Ronan SA-8 Source Holder

The SA-8 is a rugged, general purpose source holder suitable for a wide range of applications requiring an externally mounted source. The SA-8 provides shielding which meets all international standards for radiation limits, and accomodates source activity up to 5 Curies (185 GBq) CS-137 or 18 mCi (0.67 GBq) Co-60.

Features:

- Ductile Iron cast with epoxy paint; also available in Stainless Steel and PVC-coated ductile iron
- Lead free option available
- Firepro of design available
- Manual rotary shutter standard; shutter position indicator contact output, air or electric actuated shutter with position indicator contact output optional.

Scintillation Detector

Ronan pioneered the use of solid crystal scintillation detectors more than 30 years ago, and now has an installed base in the thousands across a wide variety of applications worldwide. Ronan employs two types of crystals, Scintillating Plastic Crystals for standard applications and Sodium Iodide scintillating crystals for ultra low-level fields. Scintillation Detectors provide efficient detection, enabling the use of lower-level sources. Ion Chamber detectors are also available for extremely high vibration applications.

X96S Series Radiometric Transmitters

The X96S series of Radiometric Transmitters offer calibration and configuration in a simplified format. They provide flexibility and inherent stability of digital processing to process measurements. The diversity of the design enables the customer to choose from a self-contained unit mounted remotely from the measurement, a blind transmitter with various communication options, or any combination in between. The X96S Transmitters are modular in design, enabling the measurement computer to be tailored to the application requirements. Push-button programming is obtained through the LCD Graphic Display. All programming prompters are in English, with help screens available almost eliminating the need for a manual. Various board configurations accept multiple digital or analog inputs from ion chambers or scintillation detectors, as well as analog or discrete inputs and outputs. Serial communication is available in multiple formats including the HART® format.

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