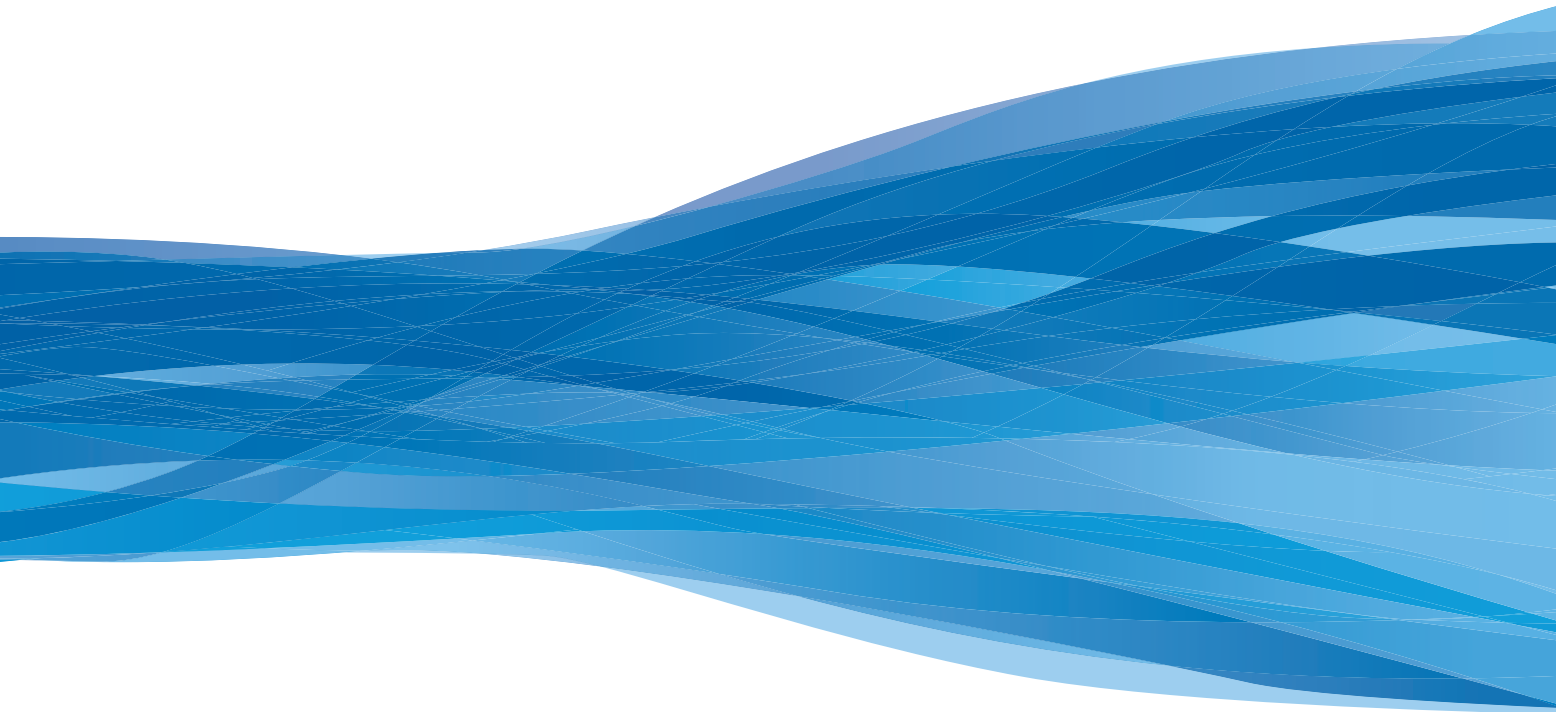


TRACERCO™ Smart Density Gauge

Type PRI 160/116c - ATX



TRACERCO™ Smart Density Gauge

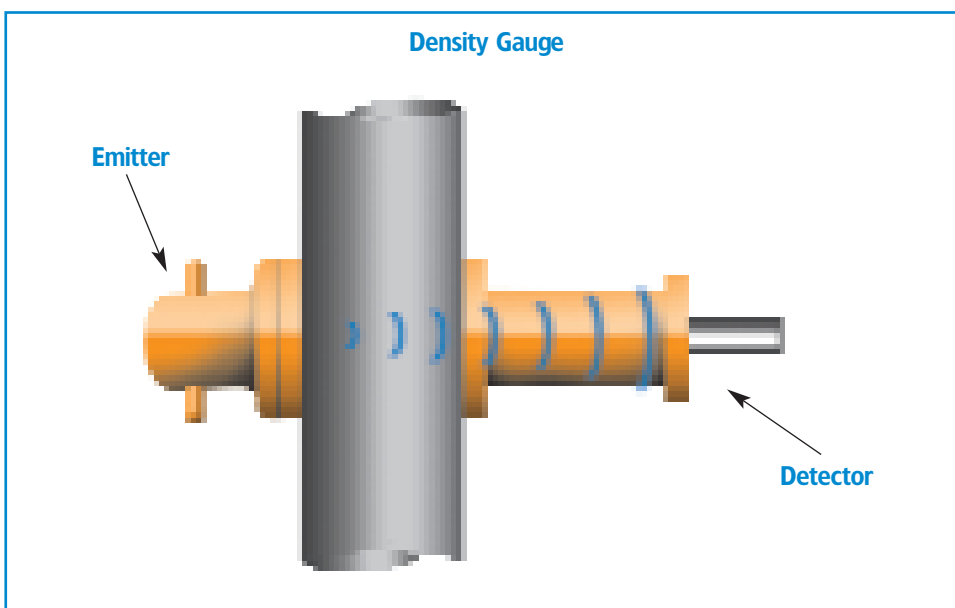
The **TRACERCO™** Smart Density Gauge is a non-intrusive, non-wetted field instrument which utilizes advanced nucleonic measurement technology. The instrument, which is a fully bespoke design, can easily be fitted to new production vessels or retrofitted onto existing units.

Principle of Operation

A narrow beam from the radioactive source is directed through the vessel or pipe to a detector mounted opposite. The beam will be attenuated by the vessel walls and the process medium. As attenuation by the walls is constant any variation in intensity at the detector will be caused by the process medium. During calibration a density to intensity relationship is established which allows the signal processor to compute any density from the measured intensity at the detector.

The detector (PRI 116c-ATX) comprises a scintillator (crystal) and a high voltage photomultiplier tube. Gamma radiation entering the crystal produces minute pulses of light at a frequency proportional to the intensity of radiation. The light pulses are detected by the photocathode of the photomultiplier tube and converted to small voltage pulses. These are amplified within the tube to a size sensible for further amplification by the detectors electronic circuit.

Pulses of a standard height are then passed via the interconnecting cable to the PRI 160 HART interface. Because of the statistically random nature of this pulse stream, an integrating factor (time constant) is applied. This steadier signal is computed into a figure for density. Temperature correction may be made before a final density figure is displayed and transmitted to the plant's instrumentation.



Utilizing HART Technology

The **TRACERCO**™ Smart Density Gauge utilizes advanced **HART**™ technology, which means there is:

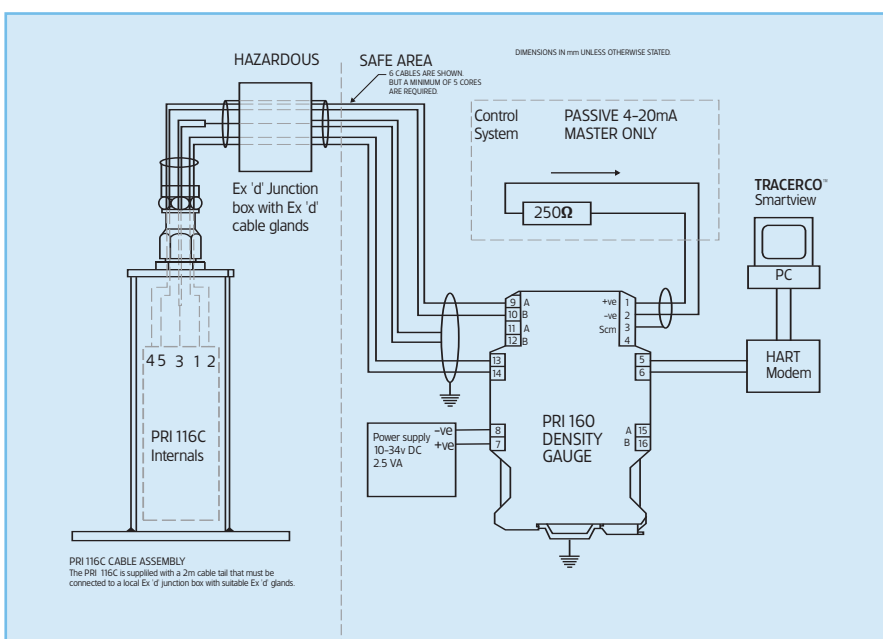
- A **HART**™ Digital Interface allowing direct communications via the customer's DCS system
- Full **HART**™ protocol allowing asset management

Features of the Instrument

The **TRACERCO**™ Smart Density Gauge has a number of key features that differentiate it from the other industrial level gauges:

- It provides real-time in line or in vessel measurements

- It has no moving or wetted parts, leading to reduced maintenance and high reliability
- The instrument detector is externally mounted, allowing it to cope with the harshest process conditions, fluids or solids
- Flameproof enclosure certified EEx d IIC T5. Suitable for Zone 1 operation
- Automatic compensation for source decay
- External automatic compensation for changes in vessel operating pressure
- Linear, table and logarithmic linearization options for level correction
- Extensive self-checking and diagnostic facilities



TRACERCO™ Smart Density Gauge

Specification

Level/Density/Concentration Measurement	HART™ compatible 4–20mA Output. External HART™ input for Pressure/Temperature correction. External 4–20mA correction signal can be achieved when combined with a PRI 159. 0.5 second update interval of level/density/concentration measurement – constant output. PRI 160 safe area mounted HART™ interface. PRI 116c Field mounted measurement instrument.
EMC	Both units comply with directive 89/336/EEC
Configuration	HART™ Transmitter
Electrical Power Requirements	10–34V DC 2.5VA Power supply required for PRI 160. The PRI 160 supplies power to the PRI 116c field mounted instrument.

PRI116C (Sensor instrument)

Sealing	Sealing to IP66
Electrical Safety	Flameproof enclosure certified EEx d IIC T5 (T _{amb} = -20°C to +60°C)
Operating Temperature Range	-20°C to +60°C
Detector cable	5 core screened cable is required for connection between the PRI 160 and the field mounted PRI 116c unit. The PRI 116c is supplied with a pre-assembled flameproof gland and 4m flying lead as standard. A flameproof junction box with appropriate glands is required to connect the PRI 116c-ATX to the PRI 160.

PRI160 (Modbus to HART converter)

Operating Temperature range	0°C to +70°C
Electrical Safety	Safe Area mounting only (DIN rail fitting)
Indicators	LED indicators provide instant recognition of power and connection to the PRI 116c-ATX.
Electrical	2 wire passive 4–20mA/ HART™ interface to DCS.

HART™ is used under licence from HART Communications Foundation.

Other TRACERCO™ Instruments:

The TRACERCO Profiler™	TRACERCO™ PhaseGauge
TRACERCO™ Smart Level Gauge	TRACERCO™ Smart Interface Gauge
TRACERCO™ Radiation Monitor	TRACERCO™ Mud Monitor



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