



# HUMBOLDT

## Humboldt HS-5001EZ Nuclear Density Gauge

### The Humboldt HS-5001EZ Nuclear Density Gauge—easy is just the beginning

Humboldt's HS-5001EZ Moisture/Density Gauge is just that— easy. Easy to operate, easy to power and easy to service. The EZ gauge features a menu-driven control panel with easy-to-use, built-in test routines and auto features, making testing a quick and accurate operation. It also features our innovative trigger release handle that eliminates pinched fingers while providing smooth operation. Available in 8" (200mm) and 12" (300mm) lengths with either 1" (25mm) or 2" (50mm) increments, the EZ gauge provides a single gauge solution to density and moisture measurements.

The EZ's versatility allows it to measure density through direct transmission and backscatter modes, as well as including thin lift and trench modes, as well as moisture determinations. The gauge uses an advanced micro-processor-based technology to provide highly-accurate measurements of density and moisture that are automatically computed for direct readouts of wet density, dry density, moisture content, percent of moisture, percent of compaction (Proctor or Marshall), void ratio and air voids.

The EZ Gauge complies with all pertinent standards: ASTM D6938, D2950, C1040 and AASHTO T310. The gauge is calibrated by the Five-block calibration method.

#### Moisture/Density Gauge— HS-5001EZ121

Measures to 12" (300mm) depth in 1" (25mm) increments.

#### Moisture/Density Gauge— HS-5001EZ122

Measures to 12" (300mm) depth in 2" (50mm) increments.

#### Moisture/Density Gauge— HS-5001EZ081

Measures to 8" (200mm) depth in 1" (25mm) increments.

#### Moisture/Density Gauge— HS-5001EZ082

Measures to 8" (200mm) depth in 2" (50mm) increments.



#### Easy to Operate—

Humboldt's HS-5001EZ Moisture/Density Gauge is just that— easy to operate. The EZ gauge features a menu-driven control panel with easy-to-use, built-in test routines and auto features, making testing a quick and accurate operation.



**EZ** does it.

- Menu-driven operation—direct readings in engineering units
- AA batteries eliminate charging—6-12 month battery life
- Easy operation handle with positive latch
- Modular design, simplifies repairs
- Automatic depth sensor



#### Easy to Power—

The EZ is powered by six standard AA alkaline batteries, which provide up to 2000 hrs of service. No chargers are needed and you can buy batteries almost anywhere, including the corner convenience store.



#### Easy to Service—

The EZ gauge also uses a modular design, which allows it to be serviced in the field, if ever necessary. With this gauge, you don't have to send it back to the factory for repairs, we'll send you the necessary components and walk you through any repair procedure.

# Humboldt HS-5001EZ Nuclear Density Gauge

## Radioactive Materials Data Needed for License Application

Radioactive Material	Chemical/Physical Form	Maximum Amount
<b>Cesium-137</b>	Sealed Source Humboldt: 2200064	Not to exceed 11 millicuries per source
<b>Americium-241:Be</b>	Sealed Source Humboldt: 2200067	Not to exceed 44 millicuries per source

## Measurement: Density at 125 pcf (2000 kg/m<sup>3</sup>)

Direct Transmission, 6" (150mm)	15 seconds (Fast)	1 minute (Std.)	4 minutes (Slow)
Precision, pcf (kg/m <sup>3</sup> )	±0.5 (8)	±0.25 (4)	±0.13 (2)
Chemical Error, pcf (kg/m <sup>3</sup> )	±1.0 (16)	±1.0 (16)	±1.0 (16)
Surface Error, pcf (kg/m <sup>3</sup> )	-0.5 (8)	-0.5 (8)	-0.5 (8)
Measurement Depth: 2 to 12" (50 to 300mm)			

Backscatter, 3.5" (88mm)	15 seconds (Fast)	1 minute (Std.)	4 minutes (Slow)
Precision, pcf (kg/m <sup>3</sup> )	±1.0 (16)	±0.5 (8)	±0.25 (4)
Chemical Error, pcf (kg/m <sup>3</sup> )	±2.5 (40)	±2.5 (40)	±2.5 (40)
Surface Error, pcf (kg/m <sup>3</sup> )	-3.0 (48)	-3.0 (48)	-3.0 (48)
Measurement Depth: 3.5" (88mm)			

Moisture at 10pcf (160kg/m <sup>3</sup> )	15 seconds (Fast)	1 minute (Std.)	4 minutes (Slow)
Precision, pcf (kg/m <sup>3</sup> )	±0.5 (8)	±0.25 (4)	±0.13 (2)
Surface Error, pcf (kg/m <sup>3</sup> )	-0.25 (4)	-0.25 (4)	-0.25 (4)
Measurement Depth: 4-8" (100 to 200mm)			

## Radiological

### Gamma Source

Material, Type and Amount:	Cs-137, 370MBq (10mCi)
Special Form Registration:	USA/0634/S
ANSI and ISO Class:	Below 7000 S/N USA/0634/S Above 7000 S/N USA/0356/S

### Neutron Source

Material, Type and Amount:	Am-241: Be, 1.48GBq (40mCi)
Neutron Yield:	90 Knps ±10%
Special Form Registration:	USA/0632/S
ANSI and ISO Class:	Below 7000 S/N USA/0632/S Above 7000 S/N CZ/1009/S

### Source

Type:	Sealed Source, Special Form
Housing:	Stainless Steel, Double Encapsulated

### Surface Dose Rates

18.7 mrem/hr Maximum  
(Neutron and Gamma)

### Transit (shipping) Case

DOT 7A, Type A, Yellow II Label, O.2 TI

## Electrical

Displays:	4 lines x 20 alphanumeric w/ backlit liquid crystal
Timer Stability:	0.01%
Power Supply Stability:	0.10%
Power Source:	Six alkaline AA-size batteries
Power Consumption:	Active—6.5mA Battery Life—1400 hours
Power Protection:	Main Batteries—Circuit Breaker Regulated Supplies—Short Circuit Proof
Low Battery Condition:	LOBAT Alarm and Auto Shutoff for low and dead battery conditions
Battery Life Remaining:	Automatically Estimated at Power-up by activating TEST routine



## All models Include:

Gauge, Reference Standard, Source and Case Certification, Wipe Test Kit, Rod Guide/Scraper Plate, Drill Pin, Four Pound Hammer, Pin Extraction Tool, Zippered Accessory Case, Transit Case, Radiation Safety Manual and Operator's Manual.

## Mechanical

Operating Temperature:	14 to 158°F (-10 to 70°C) ambient, 347°F (175°C) Material Surface
Storage Temperature:	-70 to 185°F (-55 to 85°C)
Humidity:	98% without condensation, Rain-Resistant Construction
Vibration:	0.1" (2.5mm) at 12.5 Hz
<b>Materials:</b>	
Shielding:	Tungsten Powder Alloy
Source Rod:	440C Stainless steel, Induction, heat treated to 55 Rockwell C
Gauge Base:	Computer-Machined 6061-T6 Aluminum, Hard-Coated and Teflon Impregnated
Post and Frame:	Computer-Machined 6061-T6 Aluminum, Anodized for Anticorrosion
Index Rod:	7075 aluminum, Hard Coated and Teflon Impregnated
Top Shell:	Injection-Molded Noryl with Integral Color
Bearing:	Relieved Bronze with Neoprene Seals
Screws/Fittings:	Stainless Steel and Brass

## Dimensions/Weight

<b>Gauge:</b>	
Dimensions (base):	15.75" x 8.66" x 5.5" (400 x 220 x 140mm)
Handle Height:	18" or 21.5" (450 or 550mm)
Weight:	30 lbs (13.6kg)
<b>Reference Standard:</b>	
Dimensions:	25" x 7.8" x 3" (350 x 200 x 75mm)
Weight:	10 lbs (4.5kg)
<b>Transit Case:</b>	
Dimensions:	31" x 14" x 19.5" (787 x 356 x 495mm)
Weight:	31 lbs (11.8kg)
<b>Accessory Case (loaded):</b>	
Dimensions:	19.7" x 9.8" x 5" (500 x 250 x 125mm)
Weight:	16 lbs (7.3kg)
<b>Total Shipping Weight:</b>	90 lbs (41kg)

**Nuclear Density Gauge Sales: 1.800.537.4183**



**Humboldt Scientific, Inc.**

[www.humboldtscientific.com](http://www.humboldtscientific.com)

551-D Pylon Drive  
Raleigh, North Carolina 27606-1487 U.S.A.

U.S.A. Toll Free: 1.800.537.4183

Voice: 1.919.832.6509

Fax: 1.919.833.5283

email: [hsi@humboldtmfg.com](mailto:hsi@humboldtmfg.com)