Testing Equipment for Construction Materials

HUMBOLDT

# Humboldt HS-5001SD Nuclear Density Gauge


Humboldt's NEW HS-5001SD Moisture/Density Gauge provides easier and more efficient operation, data collection and processing, safety and repair than any other gauge in its class. This new Gauge uses state-of-the-art technology to bring you a host of new features to make your job easier. Featuring a 4.3" touch-screen, the SD Gauge provides intuitive operation of all gauge operations. You also have the option to use the gauge's touch pad instead of the touch-screen, if desired.

The SD'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 SD Gauge complies with all pertinent standards: ASTM D6938, D2950, C1040 and AASHTO T310.

The gauge is calibrated by the Five-block calibration method.

**Touch-Screen or Touch Pad—**
You have your choice with the new Humboldt HS-5001SD Moisture/Density Gauge. The gauge features a 4.3" touch-screen, which provides complete control or you can also use the menu-driven touch pad.

**Easy to Power—**
The SD Touchscreen Gauge is powered by a rechargeable NiMH battery, which provides up to 60 hrs. of runtime. In addition, the gauge can also be powered by six standard AA alkaline batteries. Car charger available.

NiMH

**GPS—**
The SD Gauge is equipped with GPS, which keeps track of the actual location of your readings to ensure locations and validity of tests.

**Wireless Enabled—**
The new EDG gauge can connect to your PC for downloading test results via its wireless technology. No more cables and gauges on your desk. The wireless connection provides a reliable and secure connection up to 30 feet.

**USB Port—**
The SD gauge also has a USB slot, which provides a convenient way to capture test data and take it with you, as well as provide an easy way to upgrade the gauge's firmware. Firmware upgrades will be available via the internet from our website.

**Easy Self Repairs—**
The SD Gauge's modular design enables it to be serviced in the field by you, if necessary. No need to send the gauge in for repair, we'll send you the necessary components and walk you through any repair procedure.

**Moisture/Density Gauge— HS-5001SD121**
Measures to 12" (300mm) depth in 1" (25mm) increments.

**Moisture/Density Gauge— HS-5001SD122**
Measures to 12" (300mm) depth in 2" (50mm) increments.

**Moisture/Density Gauge— HS-5001SD081**
Measures to 8" (200mm) depth in 1" (25mm) increments.

**Moisture/Density Gauge— HS-5001SD082**
Measures to 8" (200mm) depth in 2" (50mm) increments.

# Humboldt HS-5001SD Nuclear Density Gauge

### Radioactive Materials Data Needed for License Application

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

### Radiological

| | |
|---|---|
| Gamma Source | |
| Material, Type and Amount: | Cs-137, 370MBq (10mCi) |
| Special Form Registration: | USA/0356/S-96 Rev 12 |
| ANSI and ISO Class: | ANSI 77C66535 |
| Neutron Source | |
| Material, Type and Amount: | Am-241: Be, 1.48GBq (40mCi) |
| Neutron Yield: | 70 Knps ±10% |
| Special Form Registration: | CZ/1009/S-96 Rev 1 |
| ANSI and ISO Class: | ISO/99/C66545 |
| 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 |

### Measurement: Density at 125 pcf (2000 kg/m3)

| Direct Transmission, 6" (150mm) | 15 seconds (Fast) | 1 minute (Std.) | 4 minutes (Slow) |
|---|---|---|---|
| Precision, pcf (kg/m³) | ±0.5 (8) | ±0.25 (4) | ±0.13 (2) |
| Chemical Error, pcf (kg/m³) | ±1.0 (16) | ±1.0 (16) | ±1.0 (16) |
| Surface Error, pcf (kg/m³) | -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/m³) | ±1.0 (16) | ±0.5 (8) | ±0.25 (4) |
| Chemical Error, pcf (kg/m³) | ±2.5 (40) | ±2.5 (40) | ±2.5 (40) |
| Surface Error, pcf (kg/m³) | -3.0 (48) | -3.0 (48) | -3.0 (48) |
| Measurement Depth: 3.5" (88mm) | | | |
| Moisture at 10pcf (160kg/m³) | 15 seconds (Fast) | 1 minute (Std.) | 4 minutes (Slow) |
| Precision, pcf (kg/m³) | ±0.5 (8) | ±0.25 (4) | ±0.13 (2) |
| Surface Error, pcf (kg/m³) | -0.25 (4) | -0.25 (4) | -0.25 (4) |
| Measurement Depth: 4-8" (100 to 200mm) | | | |

### Electrical

| | |
|---|---|
| Displays— | |
| HS-5001SD: | TFT, color LCD with back-light, 16:9, 480 x 272 pixel |
| HS-5001EZ: | 4 lines x 20 alphanumeric w/ backlit liquid crystal display |
| Timer Stability: | 0.01% |
| Power Supply Stability: | 0.10% |
| Power Source— | |
| HS-5001SD: | NiMH battery (AA battery optional) |
| HS-5001EZ: | Six alkaline AA-size batteries |
| Power Consumption— | |
| HS-5001SD: | Active—110mA — Battery Life—60 hours runtime |
| HS-5001EZ: | Active—6.5mA — Battery Life—1400 hours |
| Power Protection: | Main Batteries—Circuit Breaker<br>Regulated Supplies—Short Circuit Proof |
| Low Battery Condition: | LOBAT Alarm and Auto Shutoff for low and dead battery conditions |
| Battery Life | Remaining Battery Life 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, Drill Pin Extraction Tool, Zippered Accessory Case, Transit Case, Radiation Safety Manual and Operator's Manual.

### Mechanical

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|---|---|
| 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 |
| Materials: | |
| 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

| | |
|---|---|
| Gauge: | |
| 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) |
| Reference Standard: | |
| Dimensions: | 25" x 7.8" x 3" (350 x 200 x 75mm) |
| Weight: | 10 lbs (4.5kg) |
| Transit Case: | |
| Dimensions: | 31" x 14" x 19.5" (787 x 356 x 495mm) |
| Weight: | 31 lbs (11.8kg) |
| Accessory Case (loaded): | |
| Dimensions: | 19.7" x 9.8" x 5" (500 x 250 x 125mm) |
| Weight: | 16 lbs (7.3kg) |
| Total Shipping Weight: | 90 lbs (41kg) |

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HUMBOLDT
NUCLEAR GAUGES

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