



# HUMBOLDT

## HS-5001SD Nuclear Gauge



### HS-5001SD

Humboldt's NEW HS-5001SD Moisture/Density Gauge provides more efficient operation, data collection and processing than any other gauge in its class. Using state-of-the-art technology, the HS-5001SD brings you a host of new features aimed at making your job easier. Featuring a 4.3" touch-screen, the SD Gauge provides intuitive operation of all gauge operations. It also provides touch pad operation as an alternative control method.

The SD's versatility allows it to measure density through direct transmission and backscatter modes, as well as including thin lift and trench modes, and 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 and is calibrated by the Five-block calibration method.

HS-5001SD

- Touch Screen Control
- WiFi Enabled
- GPS Equipped

#### Touch-Screen or Touch Pad—

You have your choice with the 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.

#### GPS—

The SD Gauge is equipped with GPS, which keeps track of the actual location of the measuring device to ensure locations and validity of tests.



NiMH



#### WiFi Enabled —

The SD gauge can connect to your PC for downloading test results via wireless technology. No more cables and gauges on your desk. Our wireless function 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 many of the repair procedures.



# SPECIFICATIONS



## 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 PTFE Impregnated
Post and Frame:	Computer-Machined 6061-T6 Aluminum, Anodized for Anti-corrosion
Index Rod:	7075 aluminum, Hard Coated and PTFE Impregnated
Top Shell:	Injection-Molded Noryl with Integral Color
Bearing:	Relieved Bronze with Neoprene Seals
Screws/Fittings:	Stainless Steel and Brass

## 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)			

## 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:	13.8" 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)
Total Shipping Weight:	90 lbs (41kg)

## Radioactive Materials Data Needed for License Application

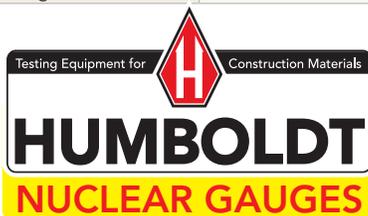
Radioactive Material	Chemical/Physical Form	Maximum Amount
Cesium-137	Sealed Source Humboldt 2200064	Not to exceed 11 millicuries per source
Americium-241:Be	Sealed Source Humboldt 2200067	Not to exceed 44 millicuries per source

## 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 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

## Radiological

<b>Gamma Source</b>	
Material, Type and Amount:	Cs-137, 370MBq (10mCi)
Special Form Registration:	USA/0356/S-96 Rev 12
ANSI and ISO Class:	ANSI 77C66535
<b>Neutron Source</b>	
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:	ANSI 77C66545
<b>Source</b>	
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



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