Testing Equipment for Construction Materials

HUMBOLDT

NUCLEAR GAUGES

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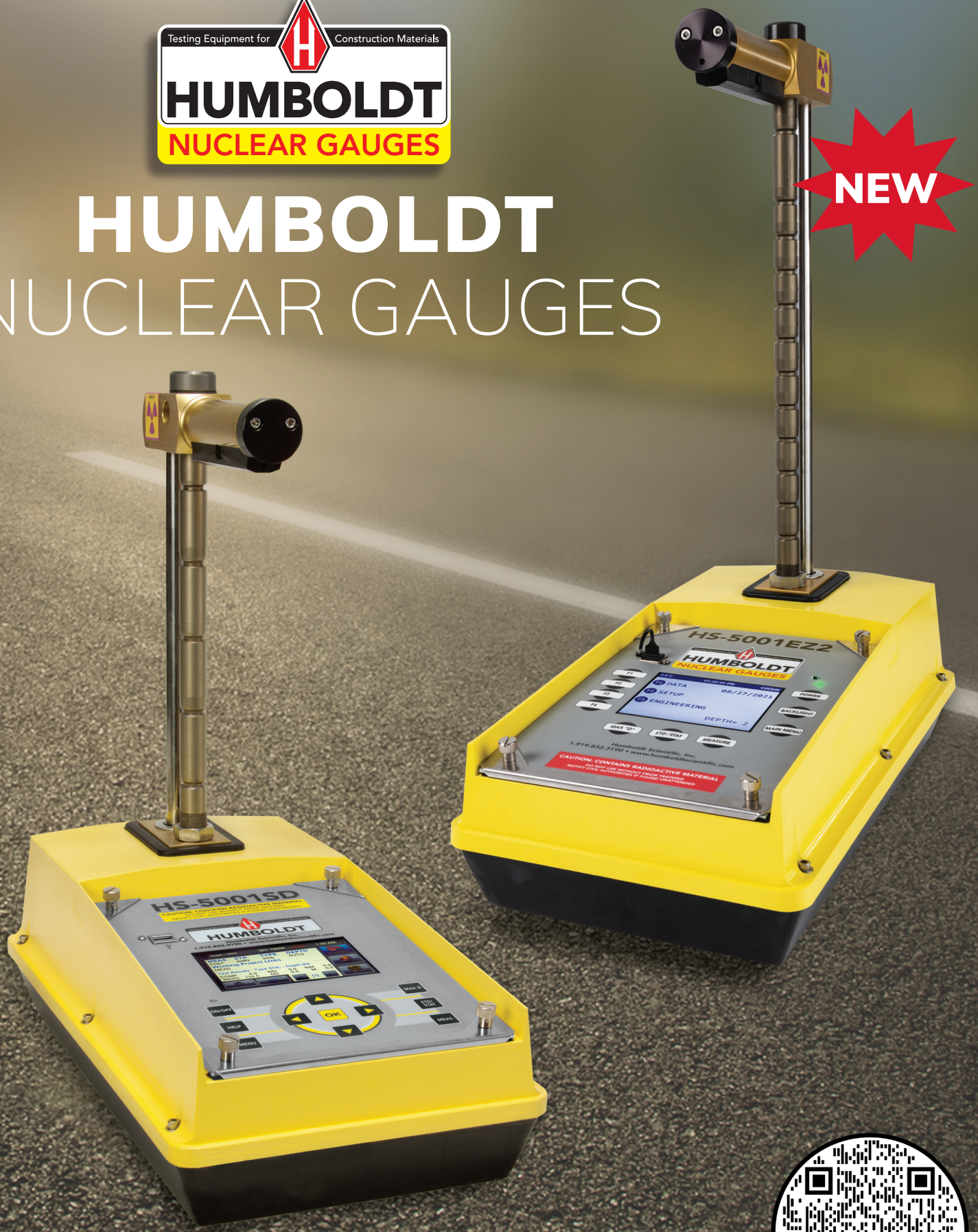
NEW



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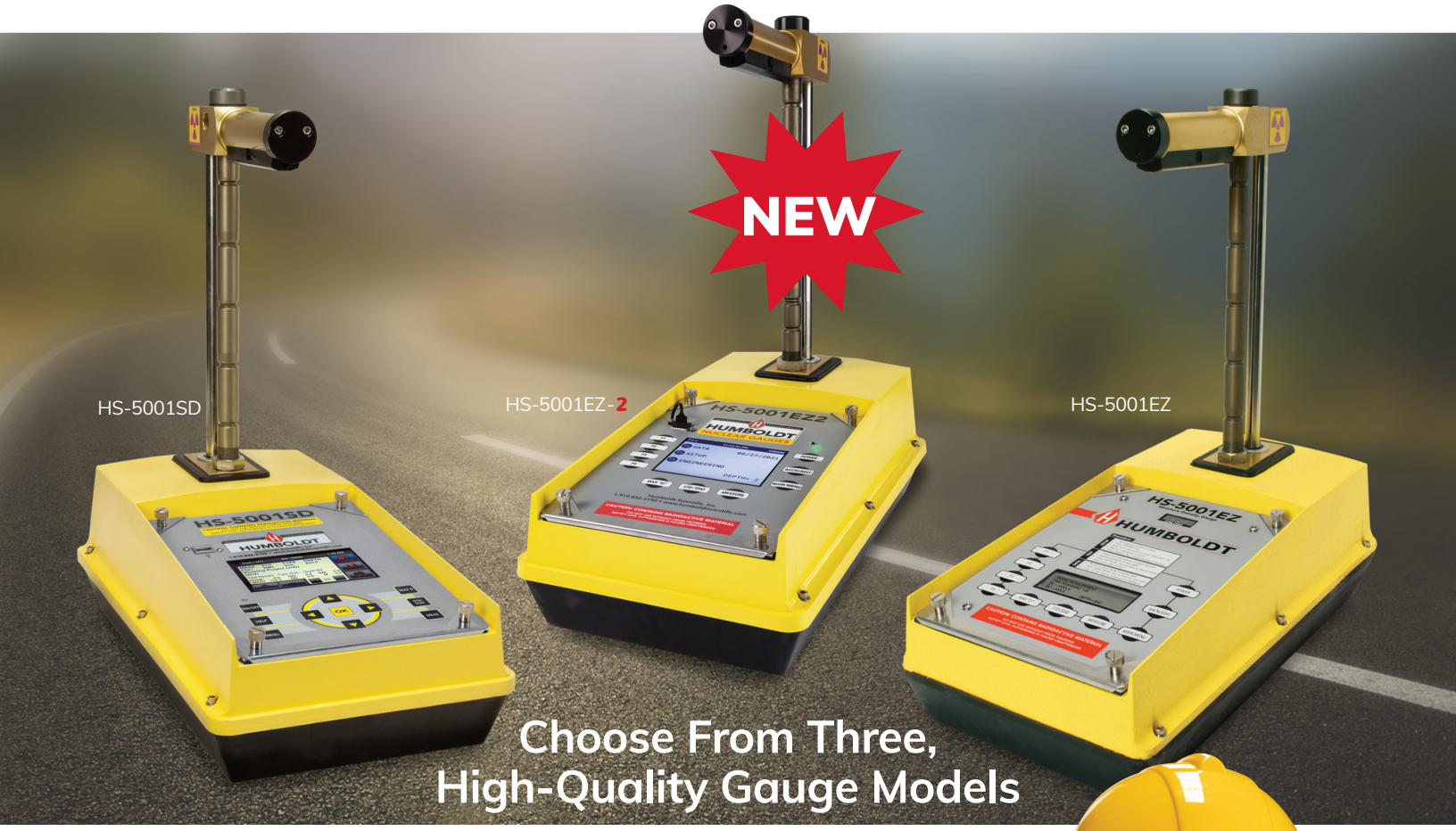
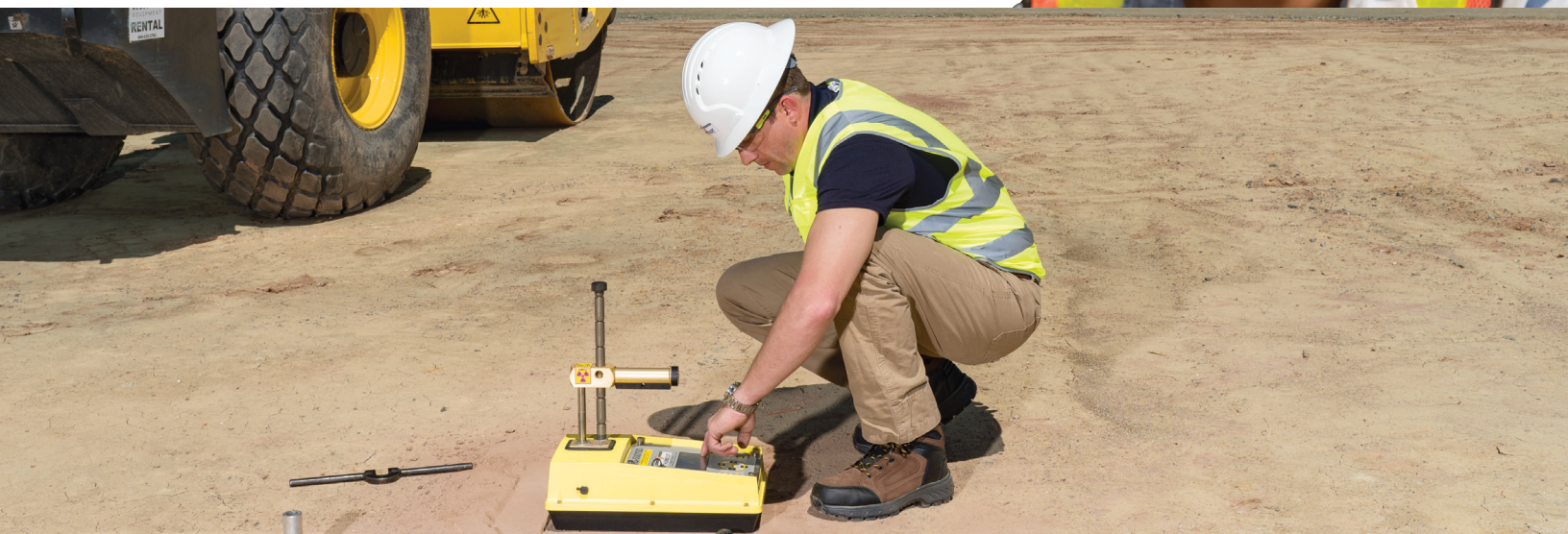
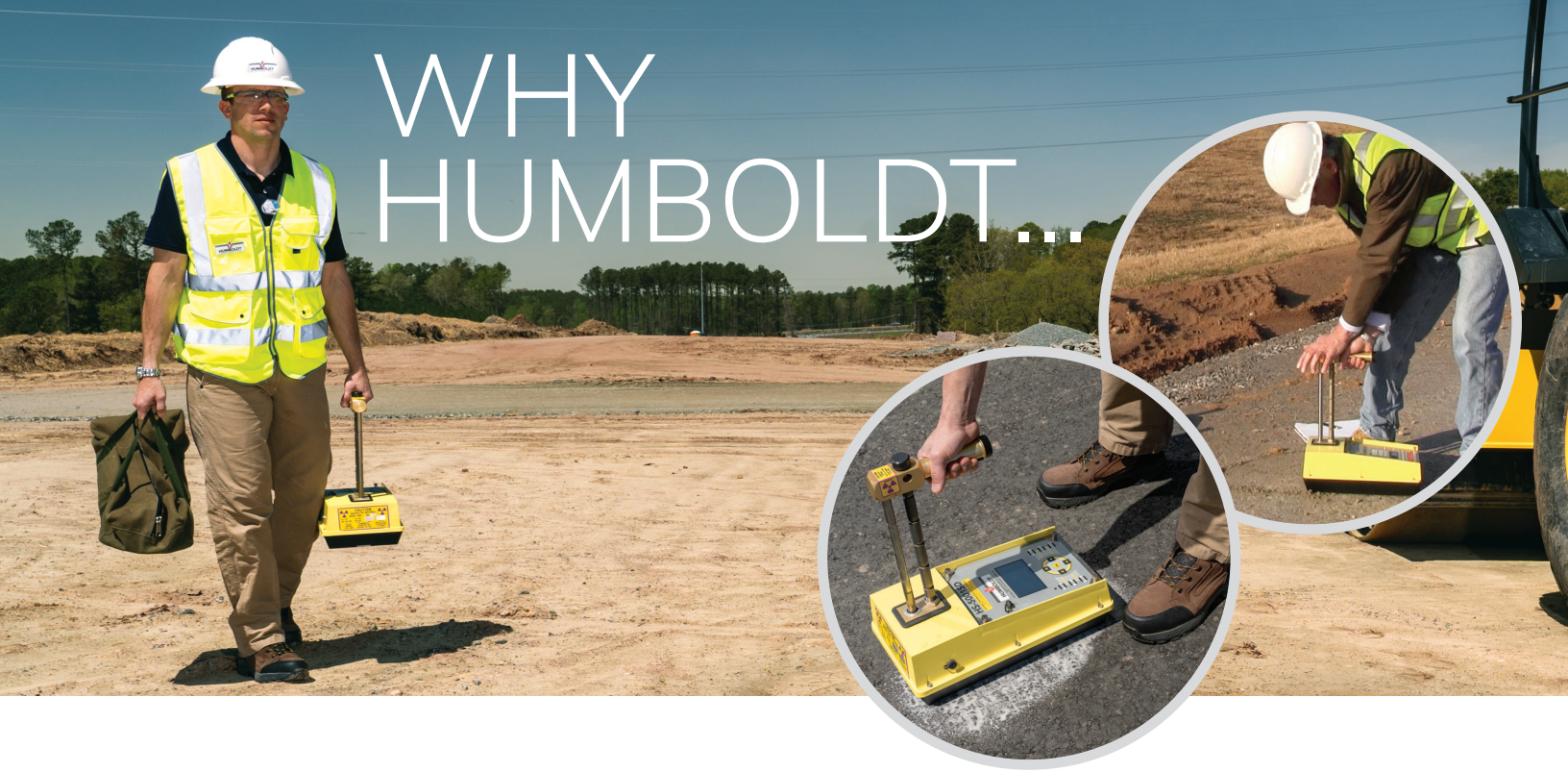
Nuclear Gauges



Humboldt's Moisture/Density Gauges Provide:

- High-quality gauges — built to take a beating
- Truly, field-serviceable with parts readily available
- No added cost from Humboldt for third party calibration
- Exceptional calibration, leak test and repair services





WHY HUMBOLDT...

All Humboldt nuclear gauges are built rugged for the day-to-day rigors of construction projects. These gauges are built to last using high-quality Noryl® PPO material, which is one of the most dimensionally stable thermoplastics available. This produces a gauge housing that is less brittle than the competition resulting in less breakage. Humboldt also pays strict attention to sealing our gauges against dirt and dust, providing a better design and less electronic problems due to dust.

Humboldt gauges are also "Field Serviceable". If you have a problem with your Humboldt gauge, chances are we can quickly get a part out to you, which you can install on your own, saving you lots of time and money. Other manufacturers require you to send your gauge back to the factory for calibration. We don't. You can send your gauge back to us or you can allow a third party to calibrate your gauge without incurring any charges from Humboldt.

With Humboldt, you get:

- High-quality gauges, built to take a beating
- Truly, field serviceable with parts readily available
- No added cost from Humboldt for third party calibration
- Exceptional calibration, leak test and repair services

Humboldt nuclear gauges are available in two models: the New EZ-**2** and SD Gauges. Our New EZ-**2** gauge is not only easy to use, but has been proven to be the most rugged guage in the industy. It's been used for years in many tough and demanding applications. It has always proven to be easy-to-operate, easy-to-power and easy-to-service. The New EZ-**2** Gauge features a new large display screen that is easy to read in bright sunlight, 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. Unlike some competitors, all Humboldt nuclear gauges are manufactured with 100% new parts — no refurbished parts, sold as new.

The SD Gauge, which provides more efficient operation, data collection and processing than any other gauge in its class. Using state-of-the-art technology, the SD gauge brings you a host of 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.

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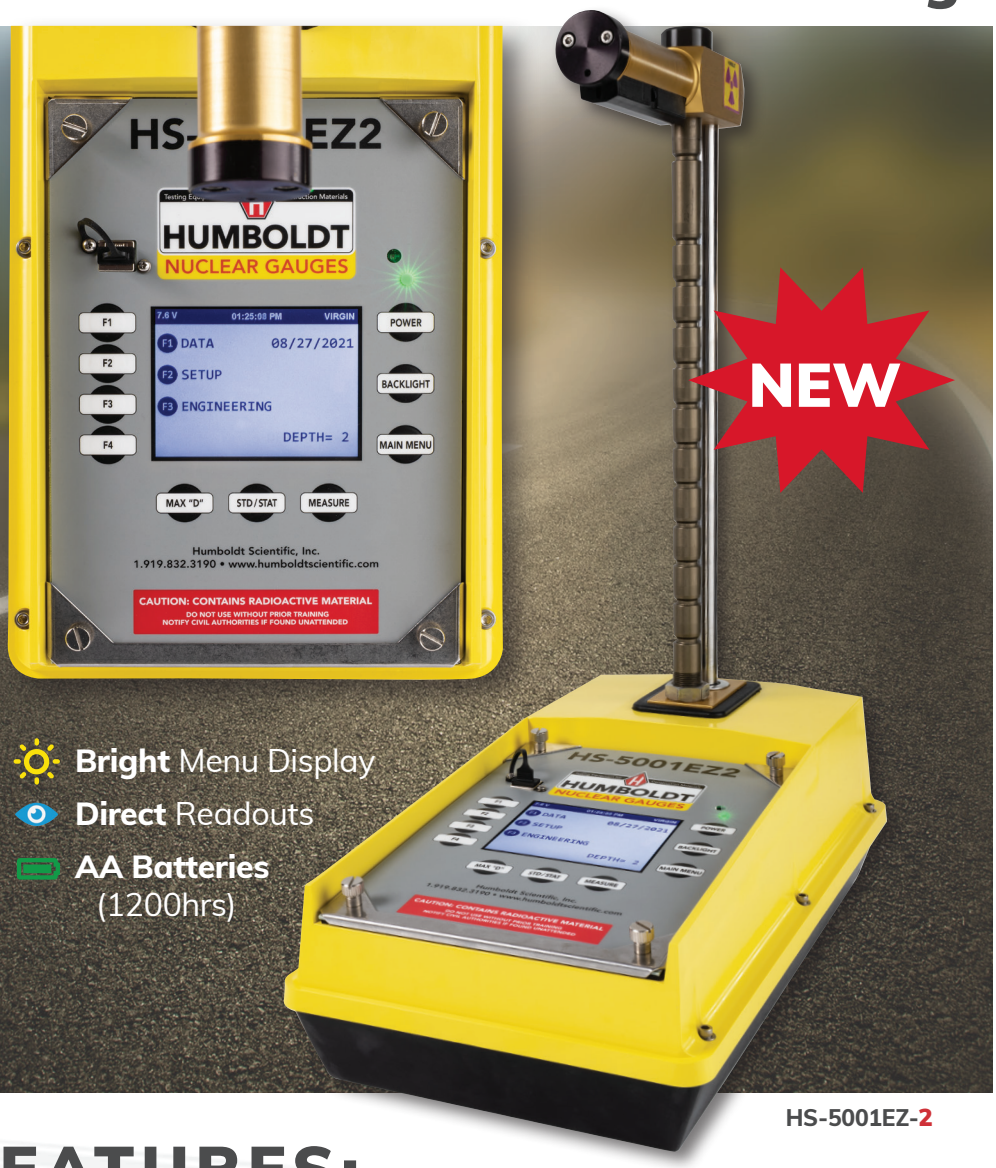
HS-5001EZ-2 Nuclear Gauge

HS-5001EZ-2

Humboldt's New HS-5001EZ-2 reflects the latest in portable, electronic design for nuclear gauges, featuring a large, back-lit LCD display. Humboldt's New EZ-2 Moisture/Density Gauge is just that — easy. Easy-to-operate, easy-to-power and easy-to-service. The New EZ-2 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.

The New EZ-2's versatility allows it to measure density through direct transmission, backscatter, thin lift and trench modes, as well as providing moisture determinations. The gauge uses an advanced microprocessor-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 New EZ-2 Gauge complies with all pertinent standards: ASTM D6938, D2950, C1040 and AASHTO T310, T355 and is calibrated by the Five-block calibration method ASTM D7013, D7759.



Bright Menu Display

Direct Readouts

AA Batteries (1200hrs)

HS-5001EZ-2

NEW KEY FEATURES:

USB Port —
For fast, test download

Large Display —
Easily readable in bright sunlight
LCD-type, TFT; Normal black

Multi-Language —
Selectable: English, French, Spanish

Micro SD Card —
Auto storage of 2GB of test data,
250 tests per project

Real Time Clock (RTC) —
Multi-date/time formats

Temperature Sensor —
Auto recording of ambient temperature at test

3D Accelerometer —
Auto turn off upon motion
(with movement of the gauge)

Power Source — 6 AA batteries

GPS—
Geographic coordinates and
altitude information

QR-Code Driven App—
Capture and share data test results with
anyone, anywhere

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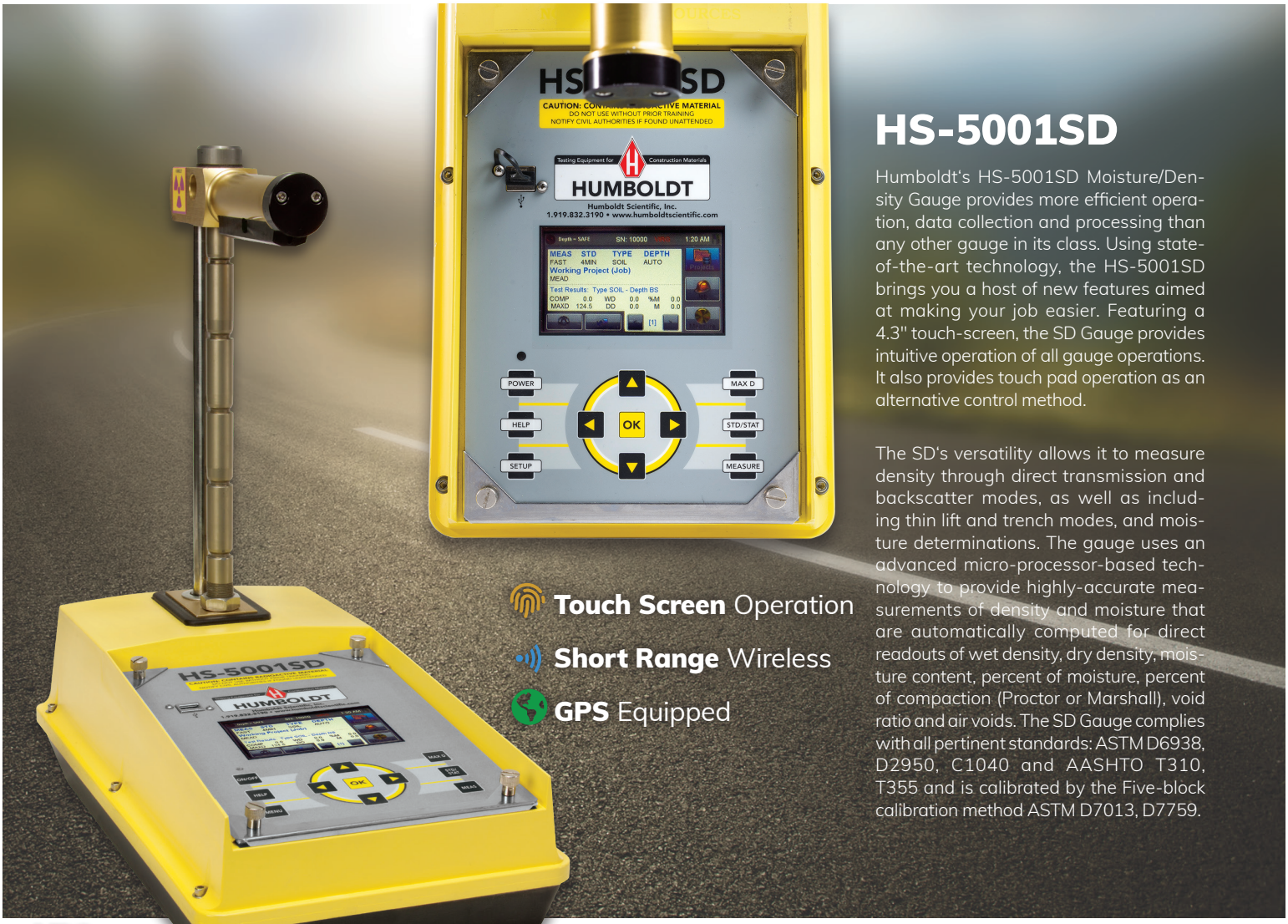
HS-5001SD Nuclear Gauge



HS-5001SD

HS-5001SD

Humboldt's 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, T355 and is calibrated by the Five-block calibration method ASTM D7013, D7759.

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 its six standard AA alkaline batteries for backup. Car charger available.

GPS—

Equipped with GPS, the SD gauges' location is used for testing purposes so you know where each Test was performed.

Short Range Wireless—

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 if assitance is needed.

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
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 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/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)
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: Moisture at 10pcf (160kg/m3)			
Measurement Depth: 4-8" (100-200mm)	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)

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	13.8" 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)

Radioactive Materials Data Needed for License Application

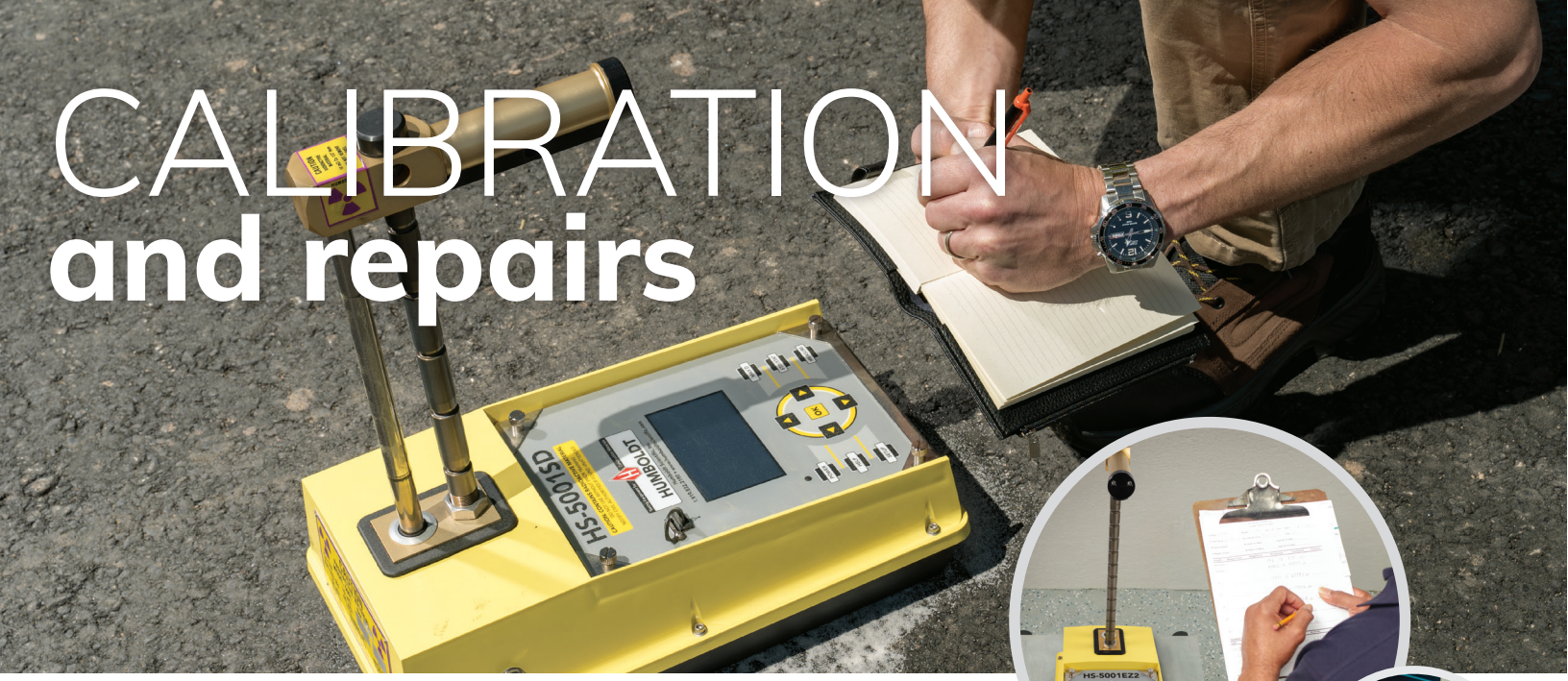
Radioactive Material	Chemical/Physical Form	Maximum Amount
Cesium-137	Sealed Source Humboldt 2200064	Not to exceed 11 millicuries per source
Americium-241:Be	Sealed Source Humboldt 2200067	Not to exceed 44 millicuries per source

Electrical

Displays HS-5001SD:	TFT, color LCD with back-light, 16:9, 480 x 272 pixel
HS-5001EZ-2:	TFT, Normal Black, Sunlight Readable
Timer Stability	0.01%
Power Supply Stability	0.10%
Power Source HS-5001SD:	NiMH battery (AA battery optional)
HS-5001EZ-2:	Six (6) alkaline AA-size batteries
Power Consumption HS-5001SD:	Active—110mA — Battery Life—60 hours runtime
HS-5001EZ-2:	Active—0.9 - 24mA — Battery Life—1200 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
Language HS-5001EZ-2 Only	Selectable – English, French, Spanish
Microcontroller (MCU) HS-5001EZ-2 Only	160MHz, 32 Bit
Real Time Clock (RTC) HS-5001EZ-2 Only	Multi date/time formats
3D Accelerometer HS-5001EZ-2 Only	Auto turn off on motion
Micro SD Card HS-5001EZ-2 Only	Auto storage of 2GB of test Data - 250 tests per project
Shutdown HS-5001EZ-2 Only	Auto/User selectable

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	ANSI 77C66545
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, 0.2 TI



CALIBRATION **and repairs**

Fast and EaZy, Full-Service

Nuclear Gauge Calibration, Leak Tests and Repairs

To support our customers and their use of our nuclear gauges, Humboldt maintains a complete **ISO/IEC 17025: 2017** accredited repair and calibration facility at Humboldt Scientific in Raleigh, North Carolina. Here we provide repair and calibration services for Humboldt gauges, as well as those of the other manufacturers. All services are performed by experienced and certified technicians with over 25 years of experience. Our services are built upon providing fast and reliable turn-around of your gauge calibration and repairs while maintaining competitive prices. Humboldt nuclear gauge calibration complies or exceeds ASTM and AASHTO standards by providing five-block calibration for all gauge calibrations. We maintain multiple sets of calibration blocks, which are traceable to master NIST standards.

These blocks are set up in isolated, temperature-controlled bays to reduce interference during calibration. Documentation and certificates for calibrations conform to NIST procedures and requirements.

We also provide leak test analysis services, gauge rental and disposal services.

EaZy Shipping Program

And, to make using our services as easy as possible, we have designed our EaZy shipping program. Just go to our website and fill out the calibration/repair form and we'll handle the rest. We will send you the completed shipping papers your gauge will need to have for shipping to us and directions on how to prepare and pack your gauge for shipment. We will contact the shipper and have them pick up your gauge from your designated location and ship it back to you when the calibration is completed.

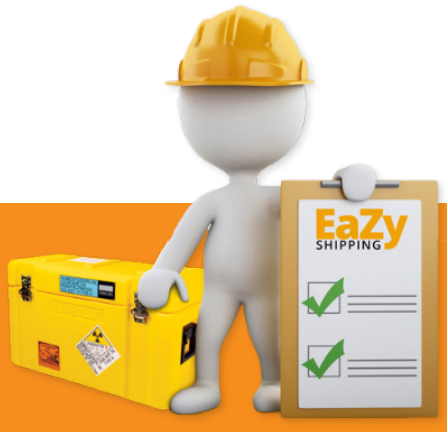
ilac-MRA

ACCREDITED

Need to ship your gauge to us for calibration or repairs?

Let us handle it!

Just fill out our online form, and we'll take care of the rest!



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